THE
RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
The Railway Engineer · TRANSPORT · The Railway News
The Railway Times · Herapath's Railway Journal ESTABLISHED 1835 · THE RAILWAY RECORD.
RAILWAYS ILLUSTRATED · THE RAILWAY OFFICIAL GAZETTE

PUBLISHED EVERY FRIDAY
AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETTE PARL., LONDON"
Telephone No.: WHITEHALL 9233 (6 lines)

Annual subscription payable in advance and postage free:

British Isles and Abroad .....£2 5s. 0d.
Single Copies .....One Shilling

Registered at the General Post Office, London, as a Newspaper

VOL. 74 NO. 4 FRIDAY, JANUARY 24, 1941

CONTENTS

	PAGE
Editorials	81
The Scrap Heap	85
Overseas Railway Affairs	86
Road Transport Section	87
A Modern Heavy-Duty Wheel Lathe	95
Railway News Section	97
Personal	97
Transport Services and the War	99
Stock Market and Table	108

NOTICE TO SUBSCRIBERS

Consequent on further paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list which will be dealt with in rotation in replacement of existing subscribers who do not renew their subscriptions.

Annual subscriptions are payable in advance and subscribers are advised to pay their renewal accounts before the expiration of the existing subscription as the dispatch of copies will in all cases be stopped on expiration

DISPATCH OF "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and machinery for such dispatch, and any reader desirous of arranging for copies to be delivered to an agent or correspondent overseas should place the order with us together with the necessary delivery instructions.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas, as they are stopped under the provisions of Statutory Rules & Orders No. 1190 *of* 1940

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:—
Mondays to Fridays - 9.30 a.m. till 3.45 p.m.
The office will be closed on Saturdays

Lord Wakefield and Railways

THE death last week of Lord Wakefield has been truly acclaimed as a loss to the country of a generous philanthropist and an effective advocate of the causes of aviation and racing motoring. Yet this was but one aspect of a full life, and it is worthy of record that the foundation of the famous business which he established in 1899 was its connection with railways. Indeed throughout his life railways were an abiding interest, and the activities of his company have contributed essentially to modern locomotive efficiency, as the improvement of force-feed lubricators concurrently with the evolution of high grade oils, for which the Wakefield concern is famous, contributed in very large measure to the practicability of superheating. Lord Wakefield was far-seeing in employing those capable of anticipating the requirements of locomotive engineers, and more recent developments were the now widely used anti-carbonising device for cylinders and valves, and grease-gun lubrication. Lord Wakefield's was too shrewd a mind to overlook the enormous potentialities of the internal-combustion engine, and his benefaction towards the development of aviation and motoring secured him world-wide fame. He was early to appreciate the value of publicity and his generous yet shrewd advertising brought him a handsome return. He was active to within a week of his death and then passed peacefully.

* * * *

Growing Demands on Transport

The increasing calls upon transport for purposes concerned directly with the war effort have given rise in some quarters to the suggestion that travel and transport, except for essential purposes, should be restricted. Experience indicates that at the present time both road and rail transport are heavily taxed, and the consequent crowded condition of most trains already acts as a strong deterrent to the undertaking of unnecessary journeys. The delays to which all traffic is now subject, because of its swollen volume and the difficulties of working in existing circumstances, further give pause to would-be travellers and consignors of goods. Nevertheless needless journeys are still being made, and there is little doubt that many movements of goods, merchandise, and fuel could be reduced, and with this end in view, there are those who maintain that transport on long distances should be the subject of drastic control. Short of this, however, there is little doubt that the general public could do more to help, especially in the way of arranging the discharge of loaded railway wagons more rapidly. Mechanical aids and pre-arranged plans for unloading vehicles of all descriptions would enable a greater use to be made of the available equipment. Working to the full during the hours of daylight for seven days a week by transport services would also be helped by contractors, factories, works, and coal merchants taking deliveries on Saturdays and Sundays in sidings and from lorries, vans, and carts. The elimination of non-essential transport and the economical use of both travel and transport services are vital necessities both for civilians and the Services alike.

* * * *

An Interavailability Concession

In these days—as indeed in many other days—it seems fair game to certain sections of the community to accuse the railway companies of every vice including that of not troubling to understand the needs of passengers. It is all the more refreshing to read recently in a West Country paper a letter from an Aberystwyth business man in which he gives his experience after a complaint he made. Holders of monthly return tickets between Aberystwyth and London have never been allowed to use the Shrewsbury route outwards and the Carmarthen route home, or *vice versa*. Circumstances at Christmas time brought home forcibly and afresh to the business man the nuisance of this regulation. Accordingly he wrote his complaint to the Minister of Transport who sent his letter *via* the R.E.C. to the General Manager of the Great Western Railway. An extract from Sir James Milne's reply shows the readiness of the railway to be helpful: "It is realised that the necessity of curtailing services during the present emergency may have reacted unfavourably on passengers travelling from Aberystwyth

and, as far as may be practicable, the company is anxious to mitigate inconveniences caused by the reduction in facilities. In the circumstances, therefore, during the continuance of the war, it has been decided to permit the interavailability of monthly return tickets from Aberystwyth to London and *vice versa*, *via* Shrewsbury or Carmarthen, without extra payment."

* * * *

Overseas Railway Traffics

The takings of the Buenos Ayres & Pacific Railway have shown a decided improvement in the second half of its financial year, and in the 27th and 28th weeks there has been a total advance of 415,000 pesos. Other Argentine railways have not been so fortunate, and the Buenos Ayres Great Southern in the two weeks has suffered a fall of 1,000,000 pesos. In the corresponding weeks of 1940 this company had an increase of 133,000 pesos. On the Central Argentine the drop in traffics in the two weeks of 1941 has amounted to 114,500 pesos. The Argentine North Eastern had in the 28th week an increase of 19,500 pesos to set against a decrease of 22,900 pesos in the previous week. For the whole year 1940 (up to December 29) the gross traffic figure of the San Paulo is £1,875,683, an increase of £176,414 in sterling, but a fall of 1,982 contos in currency.

	No. of Weeks	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Increasee or Decrease
Buenos Ayres & Pacific* ...	28th	1,584	+ 244	33,436	— 1,277
Buenos Ayres Great Southern*	28th	2,289	— 615	55,237	— 3,895
Buenos Ayres Western* ...	28th	774	— 138	19,172	— 1,676
Central Argentine*	28th	1,477	— 23	39,159	— 11,839
		£	£	£	£
Canadian Pacific	2nd	661,000	+ 133,600	1,289,000	+ 274,800
Bombay, Baroda & Central India	39th	321,600	+ 3,375	7,311,375	+ 649,725

* Traffic returns in thousands of pesos.

On the Canadian Pacific the gross earnings for the complete year 1940 amounted to £34,193,000, an increase of £3,936,800 in comparison with 1939.

* * * *

Initiative in Refreshment

As we record at page 99, the L.M.S.R. has inaugurated an important experiment in the provision of canteen facilities on trains. In view of criticisms which have been voiced both in the House of Commons and elsewhere as to the difficulties which members of the Forces experience in obtaining cheap and simple foodstuffs during long journeys, and the suggestions which have been made that more could be done to alleviate the position in this respect, it is well to be able to record that yet another step in meeting a wartime need has been made by one of the four main-line railway companies. The idea of the portable canteen which the L.M.S.R. has put into service experimentally was conceived by Mr. E. J. H. Lemon, whose tenure of office at the Air Ministry, for which he received a knighthood in the New Year Honours List, was marked by an energy and initiative which, as all who know him would expect, has quickly shown itself on his return to the L.M.S.R. as the Commercial & Operating Vice-President. An obvious disability, the massing of troops in a railway corridor seeking to obtain refreshments from one compartment and to return to their seats, will be overcome by one of the attendants canvassing for orders and carrying the refreshments to the men in their compartments.

* * * *

Philippines Transport Co-ordination

Transport in the Philippine Islands appears to have reached an uncommon degree of co-ordination, to judge from a report of the Manila Railroad Company. Besides the railway, which has a route mileage of 1,140 km. (708 miles) on the 3 ft. 6 in. gauge, the company operates a steamer service between the islands, and two subsidiary road motor services, while its joint traffic arrangements with other transport undertakings make through bookings practicable throughout every province in the island of Luzon. There are connections also with transport agencies in other provinces. The Manila Port Terminal has been modernised by the company and is now equipped with the latest types of tractors and portable cranes. The steamers run from the port in connection with railway and bus services. The company owns and operates the Luzon Bus Line, which derives its revenue principally from passenger traffic, and the Benguet Auto Line, which handles both passengers and freight. Recent expansion has taken the form of a regular train service between Manila and San Jose, Nueva Ecija, *via* Tarlac, connecting at San Jose with the highway bus service of the Rural Transport Company to the Cagayan Valley. The original Manila Railway was built by a British company, but was acquired in 1917 by the Philippine Government.

* * * *

Views Without Substance

The writer of a letter which is published in *The Motor* of January 1 would appear to have allowed his taste for invective to overcome whatever sense of proportion he may possess. He finds it almost inconceivable that there should be " again talk of a coal shortage," and even more incredible that one reason advanced should be a shortage of wagons (rather unhappily, he says, that this excuse has been put forward in advance). He declares that few who have observed the recent performance of the railways could have foreseen anything else, and goes on to upbraid the lines with having called for a square deal (for themselves) but having failed to give it to their stockholders, passengers, consignors, and consignees. He goes on to charge the railways with attempting to retain their " strangle-hold " on the transport system of the country, and with " muddle, red-tape, and inefficient management having reduced it to chaos." In a variety of metaphor he insists that the canal system has been garotted by the railways and that the long-distance motorcoach has been frozen off the roads. No attempt is made to produce any evidence in support of these startling allegations of such variety of vice, nor, apparently, does the author of them conceive that if outbursts of this kind were to be taken seriously more harm than good might accrue to the motor industry, more especially in view of the circumstances in which the railways are compelled to render to the State a variety of services at the present time.

* * * *

Travel Information in London

Owing to the frequent air raids on London, and the consequent liability to temporary interruption of normal traffic routes, the four main-line railways and the London Passenger Transport Board have set up travel information booths on public pavements at important centres in the metropolis, from which what may be termed stop-press news and advice are available. They are staffed by experienced railwaymen, ready to answer questions, and are also equipped with blackboards, fixed outside, giving summarised information about the services in operation. The booths are connected by telephone with a central information office, which, in turn, is in direct contact with the various railway controls and tram and bus centres. Thus every booth is kept constantly informed. Naturally, being situated in London, they specialise on particulars of outward services and the homeward journeys of those who work in town and live in the suburbs. Information about journeys in the other direction—to the City in the mornings—is provided by the railway administrations concerned in the various localities served by them. At the suburban stations blackboards are generally ready to give particulars of alternative rail or bus routes, and sometimes where stations are at a distance from a main route, written notices are displayed at key points. Travel information posts have been established by the L.N.E.R. in numerous suburban shops, particularly tobacconists' and newsagents', and in a number of A.R.P. posts, and each is supplied with a billboard displaying either a normal service notice or, if the local train service is interrupted, one giving particulars of alternative services. These arrangements, which we have recorded in Transport Services and the War, are working well, and have proved a great boon to the London worker.

* * * *

Long Rail Economics

A good many factors have to be taken into account in weighing up the pros and cons of the long rail. Against the reduction in the number of fishplates and fishbolts required, and above all in the cost of joint maintenance—which is the principal advantage to be gained—there must be set the increased charge made by rail manufacturing firms

for lengths longer than standard, as, for example, for any length in excess of 60 ft. in this country. In the United States the considerably shorter standard of 39 ft. makes an increase in length even more desirable, if attainable, and an additional incentive is the cost of the six-bolt American angle fishplate, which is a far more expensive item than the 9-in. two-bolt plate of only 8-lb. weight which is rapidly becoming standardised in Great Britain. American permanent way engineers desiring longer rails have recently received backing from an unexpected quarter. A paper read before the Signal Section of the American Association of Railroads has laid stress on the importance of the long rail to the signal engineer, owing to the widespread use of track circuits in that country. Calculations have shown that increasing the 39-ft. rail to 78-ft. saves $30 a mile in bonding material, where track circuits are in use, and $7.20 a mile in the labour required for installing the bonds. There is also a small saving in maintenance replacements of bonds, amounting to an average of $1.11 a mile annually. Where the plunge is taken, and a longer rail standardised, experience hitherto has proved that in course of time the manufacturing extra is done away with; in Great Britain an extra charge was made by manufacturers for increasing from 45 ft. to 60 ft., but this has long since been abolished.

* * * *

The Engineer in the Boiler Shop

In the course of a visit to a large railway locomotive works some time back, we were favourably impressed with the methods employed in the erection and repair of boilers. We were informed by the works manager that the standard achieved resulted largely from the fact that an engineer, rather than a *prima facie* boilermaker, had been given charge of the operations carried out in the shop. The design and construction of modern locomotive boilers, especially those carrying high steam pressures, advanced forms of superheating apparatus and other appurtenances, and planned to meet a continuously high demand for steam by large cylinder volumes, call for much skill and accuracy. There is a growing tendency to employ machines and machinists where formerly the boilermaker reigned supreme, and, with the steady growth of welding as a boiler shop operation, both for new and repair work, the earlier characteristics of boiler assembly have undergone another change. It has even been recently suggested that closer tolerances and the use of micrometers should figure in the fitting together of boiler sections. This notwithstanding, the production and maintenance of locomotive boilers remain, as hitherto, matters which primarily concern boiler makers working under improved conditions in shops suitably equipped for the task.

* * * *

Reality and Abstraction

That the waging of war is not fundamentally a matter of money is a fact which is at last beginning to receive the emphasis its importance deserves. *The Times* has said that " expenditure of money is not what matters in itself; it is only the reflection, the measure, more or less accurate, of the economic effort upon which the issue of war depends." In commenting on President Roosevelt's scheme for leasing war materials to Britain or selling them under mortgage, *The Times*, quoting the President's phrase, said that this " cutting out of financial nonsense " would bring the matter down to realities. Mr. R. W. Gillespie, President of the Bank of New South Wales, in his speech at the annual general meeting in Sydney on November 29 last, also stressed that " the economic side of waging war is not fundamentally a matter of money, but of physical factors, men and materials." Judged on what has hitherto been regarded as a sound financial basis, we cannot " afford " the present war. Already we should be bankrupt, just as Germany has been bankrupt for years; yet there is no question of calling off the conflict. That being so, all that matters in reality is the best possible disposition of physical factors, men and materials. The monetary aspect is quite secondary, for the essential purpose of money is to function as a means—and it is a wonderfully ingenious means—of facilitating the accountancy of production and distribution. *The Times* has aptly referred to money as the book-keeping machinery of the national effort.

Running Trains in Wartime

ON the outbreak of war the possibility of frequent and widespread air raids, and the disorganisation that might have been caused, prompted the reduction of train services to a minimum which it was thought would have enabled the life of the country to be maintained. Contrary to expectation, this situation did not immediately arise, and the reduction of facilities was found to be too severe in the circumstances, with the result that the gradual building up of facilities took place. At first a limit of 45 m.p.h. average speed from start to stop was imposed, but this was soon increased to 50 m.p.h. Thus the railway services of September, 1939, were even more restricted than those of 1918, when after more than three years of war, a minimum position had been reached as the result of gradual reduction. In the present war, the converse policy had resulted in the establishment of quite generous passenger train services at the time the intensive air raiding began last August. Since then, the dislocation caused by enemy action has been treated as temporary disorganisation and has not resulted in the preparation of fresh emergency timetables. In other words, the full schedule has been regarded as still the desideratum, and anything less adequate as a temporary expedient during restoration work. The blackout has so limited night work that much more traffic must be dealt with by day than in peacetime, and special demands on the railways are met from time to time by passenger service curtailment such as took place a year ago during the severe weather which caused a coal shortage in some parts of the country. On the last day of 1940 the Minister of Transport announced that heavy movements of coal which are required at this time of the year, combined with the greatly increased freight traffic upon the railways as a result of the nation's war effort, might make it necessary to effect some temporary reductions in certain passenger services in London and in the provinces.

Plans for the maintenance of train services during the actual period of an air raid warning, which were brought into force on the outbreak of war, have already been outlined in our columns, and it will be remembered that instructions were issued to the staffs of the main-line railways that, immediately an air raid warning had been given, all trains were to be stopped at the first signal box or passenger station so that the engine driver and guards could be advised. After passenger trains had stopped at a station platform, passengers were warned that an air raid was imminent but that the train would proceed at greatly reduced speed, and that the passengers therefore had the option of continuing their journeys or of alighting and dispersing. Distant signals were kept " on " during periods of air-raid alerts. The drivers of trains, as soon as they were advised of an air raid warning, were required to place one headlight in the middle of the locomotive buffer beam, and to remove the other headlights as an indication that they had been warned. When the " raiders passed " message had been received, trains were again stopped and the train staff advised accordingly, and normal working resumed as soon as possible. Somewhat different procedure applied on the Southern Railway where headcodes are used to describe routes and not trains. Accordingly the stop for re-arrangement of headlights was not required, and as a consequence delay to the trains was considerably less than on other railways.

To facilitate railwaymen keeping a sharp look-out for any damage or obstruction, severe speed restrictions were imposed for the period of an air raid warning, but an increase in the speed of certain classes of trains during the daylight alerts came into effect on November 11, 1940, with the object of reducing the delays which had previously been taking place to passenger and freight trains. Under this new arrangement the speed of passenger trains, fully or partly fitted freight trains, and light engines, has been increased to 25 m.p.h. during non-blackout hours. Previously, passenger trains had been restricted to 15 m.p.h. at all times and braked goods trains to 10 m.p.h. During blackout hours the speed of all such trains is now 15 m.p.h. Other trains may now run at a speed not exceeding 15 m.p.h. at all times during air raids, instead of the 10 m.p.h. previously prevailing. Since November 11 also, engine headlights remain in the normal position, and have not to be altered

XUM

as previously. Moreover, on the sounding of an "alert" passenger trains no longer call at the first station to enable passengers to be advised but, after the train staff have been warned by the signalman, work through to the first booked stop. Where a signal box is adjacent to a passenger station at which a train is booked to stop, the warning is given by the station staff to avoid an additional stop at the signal box.

* * * *

H.E.H. The Nizam's State Railway

THE administration of H.E.H. the Nizam's State Railway owns 1,302 route miles of line and works for the Government of India the 22 miles of the Bezwada Extension Railway and the 36 miles of the Dhone Kurnool Railway. Of the total worked, 688 miles are broad gauge and 672 metre gauge. It is the practice of the administration to issue a preliminary review of operations soon after the close of the official year and some features of this review for the year ended March 31, 1940, were published on page 634 of THE RAILWAY GAZETTE for May 3, 1940. We have now received from Major E. W. Slaughter, the General Manager, the full report for that year. Owing to the necessity for economy as a result of the war, the usual photographs and maps and other special features of the report have been omitted, but ample information is still provided. The year under review was dominated by seven months of war which inevitably increased the cost of stores and necessitated the closest attention to the conservation of material. Yet it produced an increase in traffic more than sufficient to offset the increased cost of operation and realised gross earnings and net earnings which constituted a record in the history of the railway. It also marked the close of the first decennium since the acquisition of the railway by His Exalted Highness, and some account of the progress made was given in THE RAILWAY GAZETTE of May 3 last. During this period the State Exchequer has received 10 crores of rupees from the railway administration as profits from the operation of the railway. This sum represents nearly two thirds of the present capital at charge of the railway, road, and air transport services. The net return on the combined capital of the rail, road, and air services owned by the Nizam's Government was 7·93 per cent. for the year under review compared with 7·61 per cent. in the previous year. Railway figures for the combined system are compared in the accompanying table :—

	1938–39	1939–40
Route miles	1,360	1,360
Passengers	9,086,753	8,882,828
Tons	2,881,977	3,016,701
Train-miles	3,885,704	3,817,286
Operating ratio including depreciation	48·9 per cent.	49·3 per cent.
	Rs.	Rs.
Passenger receipts	61,55,636	61,30,647
Goods receipts	1,64,84,390	1,74,98,380
Gross earnings	2,42,61,742	2,53,25,374
Working expenses	1,18,65,741	1,24,79,218
Net earnings	1,23,96,001	1,28,46,156

The increase of Rs. 6·1 lakhs in expenditure was for the greater part not connected with the actual working costs for the year, as the accounts for the previous year were affected by certain special credits. The only important increase directly connected with the working costs for the year was Rs. 0·6 lakh for heavy boiler renewals and higher cost of materials. As regards earnings, the number of passengers was lower by 2·2 per cent., mainly in suburban traffic, while receipts under this head also fell by 0·4 per cent. On the other hand, the total of goods traffic, 3,017,000 tons, was not only 4·7 per cent. higher than in 1938-39, but was the highest on record. The goods receipts were 6·1 per cent. higher, the two main factors contributing to the improvement being better cotton movements and increased coal traffic. In view of the enhanced costs arising out of the financial situation created by the war, the Government of India decided that railway charges with certain exceptions should be increased, with effect from March 1, 1940, and rates and fares were revised accordingly. The gross earnings of the road transport Services, Rs. 29.55 lakhs, also reached a record figure, and were moreover accompanied by a reduction in working expenses, which had the effect of lowering the working ratio of this service to 92·4 per cent. In the Air Transport Service there was a deficit of Rs. 1.3 lakh, but this service is rapidly passing out of the experimental stage. In pursuance of the desire of His Exalted Highness, to place the resources of the State at the disposal of the Crown for the prosecution of the war, the manufacture of material was undertaken in railway workshops and arrangements were made in other departments for the greatest possible contribution to war efforts.

* * * *

A New South American Transcontinental Railway

ONE of the subjects debated at the recent Pan-American Congress at Havana, was the scheme for a new transcontinental railway in South America. The subject is dealt with in a brief article which appears on page 103, and a map and longitudinal section of the route are also reproduced on that page. The delegates from Brazil and Bolivia in particular, were insistent on the advantages of such a railway. According to the views expressed by the representatives of the Governments concerned, the question has assumed an added importance of late, in view of international political developments. There is, it is true, the Transandine Railway between Buenos Aires and Valparaiso, but the reconstruction of this line, which was partly destroyed by avalanches, will take a considerable time. Also there is the Bolivian—Argentine line through La Quiaca followed by the Pan-American express. But the scheme proposed by the Brazil-Bolivian Joint Commission is said to have greater advantages than any other, especially as it would provide a crossing in the centre of the continent. There has always been a potential advantage in such a line from the point of view of commercial interests, not to mention the possibilities of expanding tourist traffic, but now these reasons are supported by the obvious strategic value of a railway linking two centrally-situated Pacific and Atlantic ocean ports, thus short-circuiting the lengthy sea detour *via* the Panama canal or the Straits of Magellan.

The distance between the Brazilian Atlantic port of Santos and the Chilean Pacific port of Arica, measured along the most feasible route for a railway, is 4,010 km. (2,492 miles), but of that distance, 1,780 km. of line from Santos to Porto Esperança in Brazil, and 946 km. from Arica to Villa Villa, through Chilean and Bolivian territory, are already open for traffic, and both these sections of railway are of metre gauge. In addition, 773 km., between Porto Esperança and Santa Cruz (in the direction of Villa Villa), are at present under construction or newly completed, making a total length of 3,499 km. of railway—out of the aggregate coast-to-coast distance, 4,010 km.—either built or building. There is, therefore, only the 511-km. (317-mile) intervening gap, between Santa Cruz and Villa Villa, necessary to be bridged by future construction to complete the inter-oceanic railway without a break of gauge. Seeing that this distance is so comparatively short and that much of it is through a rich oil-field, it is not surprising that all three countries concerned, and Bolivia in particular—which has no seaboard and in which the whole of the future construction will fall—are exceedingly anxious to have this transcontinental line completed as early as possible.

Victorian Railways Patriotic Fund

Groups of railwaymen in the Victorian Railways workshops at Spotswood and the electrical workshops at Spencer Street are making equipment in their own time for the Australian Red Cross and the Australian Comforts Fund. At the Spotswood workshops, where an auxiliary committee was formed in September last, large numbers of railwaymen are working from 4.15 p.m. to 6 p.m. on Mondays to Fridays. In about one month they made 250 Thomas leg splints. The programme of these voluntary workers also includes making bedside lockers, folding chairs, and Red Cross packing cases. The material is being supplied out of the money received by the Victorian Railways Patriotic Fund. A little-known way in which the national war effort is being assisted by voluntary work is in the production of important working drawings, which nearly 50 railway professional officers (engineers and draughtsmen) are performing at the request of the Munitions Department. For four hours every Wednesday night these railwaymen have carried out the job.

THE SCRAP HEAP

WE WERE SPLENDID

The New Year was not unnaturally marked by a mood of mutual congratulation among the people of the English-speaking world. Messages flocked in from the Dominions paying tribute to the way in which the people of this island had borne their trials and tribulations. Articles were written and films —very good films—were shown in the United States to record the gallantry and fortitude of the British people in their ordeal by *Blitz*. On all sides, we were told that we were splendid, and the admiration of the American people for the way in which we are able to carry on, bombed and on shortening commons, is an appreciable element in the movement of opinion in the United States at this critical juncture.

Actually, now that the tributes have been accepted with a fitting modesty, it is probably time that our sense of humour—and of proportion—re-asserted itself. The truth is that, for the vast majority of the population—even in the towns and even in the London area—the ordeal in its grimmer aspects has been largely confined to the newspapers. The much-heralded bogy of bombardment from the air has so far been a flop, and to deny this possibly undramatic conclusion is to pay the *Luftwaffe* a tribute that it has not earned. For it is ultimately to the *Luftwaffe* that some part at least of these congratulations on our survival through a reign of terror must inevitably pass. There has been no reign of terror.

The surprisingly small part of the population which has suffered direct bombing has suffered cruelly—and with a gallantry that deserves every praise. There has undoubtedly been a great deal of damage to property. Some people have lost their livelihoods, and the nation has lost many treasures. But most of us in the bombed areas have only been sometimes very frightened, and very often considerably inconvenienced. The really important thing about the so-called *Blitzkrieg* so far has been its failure.

It has failed to upset the ordinary, normal routine of existence in the towns attacked for any appreciable length of time—except for the few bombed-out or bereaved; mass-sheltering, except for the fact that in many cases the shelterers' homes are scarcely more comfortable than the tube shelters, is a habit rather than a necessity; and the majority of us would be wanting in honesty if we allowed ourselves to be acclaimed *en bloc* as heroes, when neither bombing nor the Atlantic blockade has imposed any great burden or sacrifice upon most of us yet. Let the praise go generously to the few courageous and unfortunate victims—but for the rest, let it be reserved for the time in the future when possibly worse may befall.—*From "The Economist."*

The R.A.F. recently dropped tickets over West Germany for the journey to England and back, according to the Berlin correspondent of the Madrid newspaper *A.B.C.* With each ticket was an invitation to German soldiers and sailors to make the journey. "But," it was added, "as you will be so well received, you won't need the return half."—Reuters.

* * *

EXTENSIVE PILFERING ON FRENCH RAILWAYS

More than a million francs worth of stolen bicycles, silk stockings, cases of tinned food, bags of potatoes, and other goods, have been found in the houses of 30 Paris railway employees, the Lyons Radio announced on December 19, says Reuters. They were disclosed by searches made after the railway authorities in Paris had received numerous complaints that luggage had been lost and goods undelivered.

* * *

As everyone knows, most dictators who have studied so much as a primer of dictation can make trains start to time, and Primo de Rivera had considerable success in this task—even in Spain, where the railway timetable belongs to the category of imaginative literature. In all such matters as roads, railways, telephones, postal services, irrigation, afforestation, tourist traffic, and the building of schools, the country made greater progress than ever before. With reforms that went deeper the Dictator was less successful.—*From "The Spanish Dilemma," by E. Allison Peers.*

* * *

Although Londoners are making an increasing use of the new travel information booths, there are still a number who mistake them for other places. Requests for coffee, a bed for the night, and tickets for the cinema are frequent. Beggars ask for coppers and optimists ask for loans of money to pay for transport to their offices. The clerks, specially chosen for their knowledge and tact, always try to help, even when the question does not concern transport in London and suburbs. "How can my young daughter be taken from Northampton to Newton Abbot without touching London?" was one poser. Another was for the workmen's fare to Wales.

DOMESTIC COAL

Adapting Abraham Lincoln's well-known dictum. "You can fuel all the people some of the time, and some of the people all the time, but you can't fuel all the people all the time!"—*From the "Manchester Daily Dispatch."*

* * *

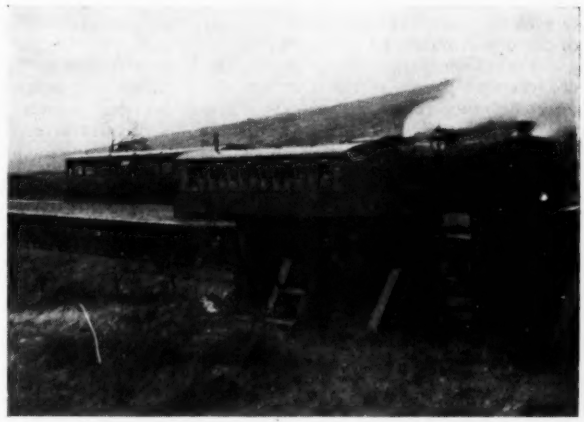
An American definition of demurrage as stated by the owner of a country grain elevator about 1925:—

"Demurrage is a mild protest against the misuse of cars for storage purposes by the selfish or indifferent, who, disregarding the rights and needs of others, convert expensive vehicles of transportation into storage warehouses, thereby contributing to so-called car scarcity, to the congestion of expensive terminals, to increased switching, and to the slowing down of transportation."

* * *

SCHOOL ON RANNOCH MOOR

What is probably the only school of its kind in existence in the British Isles is to be found at Gorton in the heart of Rannoch Moor among some of the wildest scenery in the West Highlands. Gorton, a passing place on the West Highland line, is between Bridge of Orchy and Rannoch stations in a particularly bleak part of the Moor. Until 1938 the children of railway employees residing in the vicinity of Gorton were educated at the school at Rannoch in Perthshire, but this school proved to be too small to accommodate the Gorton children as well as those in the neighbourhood of Rannoch. Consequently, the Education Authority of Argyllshire, in which Gorton is situated, approached the railway company for permission to erect a temporary school on the platform at Gorton, and asked whether it would be possible for the company to provide a carriage body for this purpose. This was done and the new school opened in March, 1938. At present there are eight scholars, and the teacher travels to the school daily from Bridge of Orchy.



The school on Rannoch Moor

XUM

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

WESTERN AUSTRALIA

Formation of a Commercial Section

As from November 1, 1940, a new section has been formed in the Secretary for Railways Branch, under which the whole of the commercial activities of the department are grouped under one head, who also takes charge of departmental publicity and advertising. The title of the officer in charge of the new section is Commercial Agent and Mr. L. T. Hickey, late Chief Clerk to the Chief Traffic Manager, will be the first occupant of the position.

In announcing the formation of the new section, the Commissioner of Railways, Mr. J. A. Ellis, said that hitherto contact with customers and attraction of new business had been carried out by officers of the branch of the Secretary for Railways, and routine matters relating to fares, freights, and claims had been under the control of the Chief Traffic Manager. Divided control of such closely allied matters was not in the best interests of the department or its customers. The Chief Traffic Manager had quite enough to do in arranging timetables and attending to the operating side of railway working, which was a specialised job, calling for the full attention of the occupant.

Road Transport the Cause

The commercial side also called for specialised development. The railways at one time were a monopolistic concern, although an indulgent and even benevolent monopoly, since the framework of the railway tariff provided low rates designed for the development of the primary industries of the State. The advent of the motor vehicle, catering for the carriage of the payable lines at the department's tariff had altered the position and it was now necessary to adopt up-to-date methods.

The amalgamation that has been brought into effect will facilitate business contacts and enable activities on the commercial side to be expanded. One of the important duties of the staff of the new commercial section will be to assist customers in computing freight charges and to advise them in matters affecting the transit of goods. The advent of petrol rationing in Australia from October 1 last will, it is expected, present consignors and consignees with many problems due to the curtailment of petrol supplies, and here is an avenue where the railways can invariably help with expert advice. The main object in creating the commercial section is to maintain and steadily improve the cordial public relations which now exist between the department and its clients. The principal duties of the new section will be attraction of traffic in all forms, and administration of matters affecting fares, freights, claims, advertising on railway property, and publicity.

INDIA

Ticketless Travel Bill

A Bill making more stringent provisions than at present to deal with the problem of ticketless travel has been introduced in the Central Legislative Assembly and referred to a select committee. The statement of the Member for Railways and Communications on the Bill emphasises that experience has shown that the provisions in the Indian Railway Act relating to ticketless travellers are insufficiently deterrent. In 1936-37, the Assembly considered and referred to a select committee a Bill which has since lapsed, for the purpose of remedying the defect. The present Bill seeks to achieve this end mainly by the provision of more appropriate penalties than are at present possible. It seeks to place remaining in a carriage without a ticket on the same footing as entry into a carriage without a ticket, and it reproduces a provision contained in the previous Bill for the ejectment of ticketless travellers. Criticism of the Bill of 1936, it is pointed out, concentrated on two features, namely, the placing on the ticketless traveller of the burden of proof that he had no intention to defraud, and the grant to railway servants of the power to arrest ticketless travellers without warrant. Both of these features have been omitted from the present Bill. It provides for the imprisonment of those ticketless travellers who have been proved to have acted with intent to defraud and it enhances the excess charges which can be levied on others. The Bill also insures that those who fail to pay the fare and excess charges, which under the present law are recoverable in the shape of a fine, can be imprisoned in default.

SOUTH AFRICA

Railway Air Services

As from December 17, weekly air services between (*a*) Johannesburg and Cape Town, Cape Town and Loanda in Angola, and (*b*) Germiston and Entebbe in Uganda, will be inaugurated by the railway administration. The luxurious new American-built Lockheed Lodestar passenger planes will be used for the new services which will be run on fast schedules arranged in accordance with the results achieved in test flights. Both services will start from Germiston. The main points of call will be as follow : (*a*)Germiston—Cape Town—Mossamedes—Lobito Bay—Loanda, and (*b*) Germiston—Bulawayo—Salisbury—Lusaka—Doodma—Nairobi—Kisumu—Entebbe.

The route of the new services will form a rough horse-shoe, the points of which stretch up the west and east coasts. Points at present not easily reached on the African continent will be brought within a few hours flying time of the Rand and Cape Town. The services will operate weekly and will be available for passengers if there is accommodation. The intention at present is to operate the services one way each week, but if the number of machines available permits, it is probable that the railway administration will run return services between Johannesburg and Cape Town in the same week, if there is sufficient patronage.

The administration is considering diverting Imperial flying boats arriving from the East to Vaalbank Dam on their way from Delagoa Bay to Durban. By means of this short detour easier connections could be established between Imperial flying boats and mail ships leaving Cape Town. Durban will, of course, remain the terminal point of the Imperial flying boat service.

If it is decided to make Vaalbank a port of call for the flying boats, jetties and other facilities will be built at the dam, within easy reach of the Rand.

NORWAY

Communications with the Far North

The northern line of railway under construction from Grong, near Namsos, to Mo and Bodo, has been opened as far as Mosjoën, a distance of about 120 miles. Beyond Mosjoën a bus service is now in operation, with three vehicles running *via* Narvik and Tromsö to Kirkenäs, the northernmost port in this country, situated on the Sydvaranger Fjord. Beyond Kirkenäs there is only communication by sea with Petsamo in northern Finland. The journey by rail and road from Oslo to Kirkenäs takes four days. Kirkenäs is the port for iron ore mined in northern Norway.

FINLAND

New Finnish-Russian Railway

The Minister of Communications states that good progress is being made with the work of building the new Kemijärvi-Salla extension, which is to meet the branch of the Murmansk Railway being built by the Russians from Kandalashka towards the Finnish frontier. The Finnish section to the Salla district will be a single, 5-ft. gauge line—in keeping with the railways of both Finland and the U.S.S.R.—53·7 miles in length.

Immediately north-east of Kemijärvi is a bridge over the Kemijoki river, 1,312 ft. long, work upon which began last summer. The remainder of the new construction was also begun then, and except for the difficulty in obtaining the necessary steelwork for it and, especially, for the bridge, no trouble is being experienced.

Train Service with Leningrad Restored

The through train service between Helsinki and Leningrad was resumed on October 22, when a train arrived at Vanviala (Vainikkala), the new Russian frontier station, from Leningrad, and proceeded to Simola, on the Finnish side of the frontier, *en route* for Helsinki.

ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

Free Telephones for Bus Enquiries

MORE than once in these columns we have remarked upon the ingenuity displayed by the bus-operating units of the Public Service Corporation of New Jersey, and the latest example of which details have reached us is the installation of a free outside telephone information service. At present this is available at seven important bus stops in the territory served by the company and its associates, and is rapidly meeting with public approval. During a recent check made by the telephone department of the company it was learned that 5,249 information calls were received on the bus information board during a 31-day period. The telephones are attached to poles at the prominent bus stops in Newark, Paterson, Passaic, Rutherford, Elizabeth, and Perth Amboy. There is also a similar telephone in the waiting room of the Pennsylvania Railroad station in Newark. Requests for bus information can be made over these telephones at any hour of the day or night. The telephones are equipped with the latest anti-side-tone device which makes it possible for persons to hear without annoyance from outside noises. The operators at the bus information board are equipped with data regarding routes, schedules, and fares, and can give quick and accurate service.

Road Transport in Eire

ALL forms of passenger traffic both road and rail have suffered during the past year as the result of the very substantial fall in travel due to the cessation of tourist traffic from Great Britain. Nevertheless the receipts from road passenger services of the Great Southern Railways are expected to be not much less than those of the preceding year as the company's tours and other facilities were well patronised by local holidaymakers and the financial results were reasonably satisfactory. Receipts from all forms of Great Southern road transport are actually expected to show an increase for 1940 compared with 1939. During the year 40 new buses (30 single-deck and 10 double-deck) were built and put into service. Co-ordination between railway and road passenger services was continued. Bus services have been successfully and economically used to replace passenger trains to race meetings, etc., where the numbers travelling were small. Where, due to unforeseen circumstances, train connections had been missed, or trains had been cancelled, similar road services were provided. The conveyance of livestock in road merchandise vehicles from outlying fairs, distant from ten to thirty miles from stations, was continued, and it is now possible to have livestock from such fairs transferred to rail and conveyed to port in time for shipment on the day of the fair. This facility has greatly expedited the conveyance of livestock from local fairs, which was not feasible when the livestock had to be walked from the outlying fair to the nearest railway station. The Great Northern Railway now operates a fleet of 126 buses for passenger services in Eire, and 13 new vehicles are at present being built at the company's Dundalk works and are expected to be brought into use in the near future. During the summer season of last year the G.N.R. organised a number of successful motorcoach tours. The company also operates 92 goods lorries for collection and delivery work, and for the transport of merchandise traffic, including livestock. In addition, it has developed a substantial furniture removal business. Although the tourist trade in Eire was hit considerably by the complete cessation of the traffic from Great Britain and America, the industry received some compensation from the numbers of Irish persons who were compelled to spend their holidays in their own country, and the Irish Tourist Association in its annual report stated recently that the 1940 season was on the whole very satisfactory. A special bureau was opened in Belfast by the association during the year and was responsible for considerably increasing the interest of prospective holidaymakers in the tourist resorts of Eire. Irish buses carried 144,492,000 passengers between January and November, 1940, according to the Department of Industry & Commerce in Eire. This figure shows an increase from 121,093,000 for the same period last year, and represents an increase from £1,385,105 to £1,524,073 in gross receipts, from passenger fares. During the 11-month period the buses ran 29,937,000 miles in 1940, against 28,445,000 in the same period of 1939.

Road Transport in Northern Ireland

THE accounts of the Northern Ireland Road Transport Board for the year ended September 30, 1940, show an operating profit of £67,473, representing an advance of £59,780 on 1939, despite the difficulties of the war. After setting aside £125,480 towards depreciation on vehicles, buildings, and equipment, there is an available surplus of £66,459 to meet interest charges which amount to £156,078. The revenue available is thus deficient by £89,619; after adding this deficiency to the debit balance of £521,935 on September 30, 1939, there is a debit balance to be carried forward of £611,554. Mr. D. L. Clarke, Chairman of the board, says it is recognised that there is considerable ground yet to cover before rationalisation of road transport is complete, but points out that it is of consequence that the past year has contributed so materially towards the fulfilment of that aim. The amount of stock issued by the board for the transfer of undertakings acquired was £844,299. In addition, the board had to borrow £3,025,000, mainly to satisfy the consideration for undertakings acquired under the provisions of the Road & Railway Transport Act (Northern Ireland), 1935. The total liability on this account, therefore, is £3,869,299, and of that sum approximately £2,250,000 represents goodwill. The cash borrowed, amounting to £3,025,000, is outstanding with the Northern Ireland Ministry of Finance and the growth of this total is stated to be broadly commensurate with the settlement of the consideration payable for the transfer of undertakings.

Trolleybus Operation in Australasia

THE use of trolleybuses in Australia and New Zealand is a development of the past eight years, and at the present time installations are in service at four places, namely, Christchurch, New Zealand; Adelaide, South Australia; Perth, Western Australia; and Sydney, New South Wales. The four undertakings have a total fleet of 84 trolleybuses and a review of their operations was included recently in *Transport & Engineering in Australia*, to which we are indebted for some of the following details. The Christchurch tramways, which are operated by the City Council, were early in the field in the introduction of trolleybuses, the first installation being placed in service in 1932, when a service was inaugurated between Christchurch and North Brighton, a distance of 9·4 miles. Single-deck vehicles are used, of which there are eleven in service, and during the year ended March 31, 1939, the vehicles covered 345,282 miles.

The tramway services in Perth are operated by the Western Australian Government and at present 22 trolleybuses are worked over 13·9 route miles. This was the first Australian administration to operate trolleybuses, when, in 1933, a service was inaugurated between East Perth and West Leederville, passing through the city and having a total distance of 4·5 miles. Three single-deck vehicles, each carrying 38 passengers, were imported for this service. As a

result of the success of the new service it was decided to make extensions, and on February 27, 1938, the line from West Leederville to Wembly Park was opened. This was followed by the substitution of trolleybuses for trams on the Claremont line and the extension to Swanbourne, which was opened on June 12, 1938. Fourteen single-deck trolleybuses were placed into operation for these services, making a total of 17 vehicles in commission. A further extension was made by the opening of a branch trolleybus line along Cambridge Street, from Gregory Street to the Boulevard, Floreat Park, on April 23, 1939. To provide vehicles for the new service, and also to relieve congestion during peak periods five extra vehicles were placed in service, the chassis of which were imported from England and the bodies built at the Midland Junction railway shops. The present fleet comprises 22 units, which work 13·9 route miles.

In Sydney, the first trolleybus service ran between Liverpool Street and Wylde Street, Potts Point; it was opened on January 22, 1934, with two single-deck vehicles, seating 34 passengers. On September 20, 1934, the service was extended to Town Hall, and an additional double-deck trolleybus, seating 63 passengers, was added to stock. Both single and double-deck vehicles, which were fitted with 80-h.p. motors, were supplied from England by the Associated Equipment Co. Ltd. Difficulties experienced in the operation of the Kogarah—Sans Souci steam tramway with obsolete equipment suggested the substitution of trolleybuses, and this was finally decided upon. The new service was officially opened on July 3, 1937, and regular passenger services began on the next day. This service was extended to start from Kogarah to Rockdale, and increased the total route miles to 8·6. Twenty-one vehicles were bought, eleven chassis from Leyland Motors Limited and ten from the A.E.C. The bodies were constructed by Ritchie Bros., of Auburn. Each vehicle is powered by a 90 h.p. motor, and the pedal-operated master control gear was supplied by the English Electric Co. Ltd. All are double-deck vehicles, seating 60 passengers (33 in the upper deck), and are mounted on six wheels. Air brakes are fitted. The vehicles are 30 ft. 6 in. long, 8 ft. wide, and 15 ft. 9 in. high. The tare weight of the Leylands is 8·7 tons and the A.E.C. 8·55 tons; the loaded weight is approximately 12 tons. At present 26 trolleybuses are operated by the New South Wales Department of Road Transport & Tramways, of which three are single-deck vehicles.

Trolleybus services were inaugurated by the Adelaide Tramways Trust between Adelaide and Tusmore, 4·3 miles, on September 5, 1937, as a result of successful experiments with a Garford double-deck vehicle extending from May, 1932, to August, 1934. The experimental vehicle was fitted with an English Electric 80 h.p. motor. The trust ordered 20 double-deck A.E.C. trolleybuses, fitted with 90 h.p. motors built by the Australian General Electric Company. The loaded weight was 12½ tons, and a seating capacity for 58 passengers was provided, of which 32 were accommodated in the upper deck. The vehicles are 29 ft. 10¾ in. long, 8 ft. 1⅛ in. wide, and 15 ft. 8 in. high, and require a turning circle of 61 ft. The control equipment was supplied by the English Electric Co. Ltd. and is similar to that used on the Kogarah—Sans Souci trolleybuses. Operation is by a pedal-operated master controller. Air brakes are provided. In 1938 the Tusmore service was extended to Port Adelaide, Largs, and Semaphore, replacing a motorbus service which in turn had replaced an isolated tramway system operating in Port Adelaide. The opening of this service increased the route mileage to 15·6 miles, and about 25 trolleybuses are now at work.

Western Australia Trams and Trolleybuses

THE Western Australian Government Tramways, which operate in the metropolitan area in and around Perth, have been controlled by the Commissioner of Railways since 1914. when 8 miles of double line and 15 miles of single line were in operation. In the year ended June 30, 1940, the commissioner's report shows that the length of tramways open at that date was 17 miles 26 chains double track, and 18 miles 52 chains single track, and at the same time the length of the trolleybus lines working was 11 miles 63 chains double line and 2 miles 10 chains single. The total length of the whole system was therefore 49 route miles. Gross earnings for the whole undertaking amounted to £304,447, against £301,179 in 1938-39, and working expenses were £275,003, against £278,526, leaving net revenue £29,444, but, as interest charges amounted to £44,521, there was a deficit of £15,077, compared with £21,816 in the previous year. The net return on capital invested increased from 2·05 per cent. to 2·66 per cent. Passengers carried on the tramways and trolleybuses numbered 31,669,053, against 31,498,234; the number of passengers per car mile was 8·26; and the earnings per passenger 2·31d. In view of possible petrol shortage, it is proposed to fit the six bus chassis on order with producer-gas units.

South African Railways Road Motor Services

ACCORDING to the annual report of the South African Railways & Harbours for the year ended March 31, 1940, the route-mileage of the road motor services operated by the railway administration at the end of the financial year totalled 16,319, an increase of 1,200 miles on the previous period. Revenue amounted to £804,693, an increase of £150,152, while expenditure also rose by £109,156 to £792,167, the result being a surplus of £12,525, compared with the loss of £28,470 sustained in 1938-39. This result, the report says, is particularly pleasing in view of the substantial reduction in rates and fares introduced in 1937, especially as expenditure was increased by higher cost of materials and a rise in the price of petrol. There were 659 motor vehicles in service, and 424 trailers, against 616 and 353 respectively in the previous year, and vehicle miles run totalled 10,756,029, compared with 9,325,186. Passengers numbered 6,365,253, an advance of 884,478, or 16 per cent., and 861,389 tons of goods were carried, an increase of 260,625, or about 43 per cent. The amount of cream transported was 2,270,152 gal., an advance of no less than 599,247 gal., or almost 36 per cent. The spectacular rise in tonnage is attributed to improved fruit and wheat crops and the existing low rates on primary products, coupled with the Central Government rebates on certain commodities.

Bus Tyre Maintenance

A REMARKABLE tyre record was achieved during the year 1939 by the large fleet of buses operated by the Public Service Corporation of New Jersey, which includes the Public Service Co-ordinated Transport and the Public Service Interstate Transportation Company. These buses covered ninety-two million miles with only one tyre interruption every 193,000 miles—the equivalent of eight times around the world at the equator. The tyres on Public Service buses are leased from several of the leading U.S.A. manufacturers and these firms maintain their own service organisation in each of the Public Service garages. It is the duty of the manufacturer's representatives to make a constant inspection of the tyres and to test them every 48 hours for inflation. Tread heights are measured at regular intervals so that only tyres with similar tread heights are mounted on the single hub double-tyred rear wheels. Front wheel alignment—accuracy in which is essential for long life in tyres—is checked every 1,500 miles. The tyres are also watched closely for signs of stone or glass cuts. Besides the manufacturer's representatives at each garage, the Public Service organisation has a tyre engineer who supervises their work and conducts tests in collaboration with the manufacturers for the development of types and construction of tyres. Large reserve stocks are stored at every garage and these tyres are kept inflated and mounted on spare wheels so that, when changes are necessary, the proper selection can be made in a minimum of time. A total of 25,000 tyre units of twelve different sizes, ranging from 7½ in. by 18 in. on small buses to the 10½ in. by 20 in. size on the 36-seat type, are used on Public Service buses during an average year.

Road Transport and the War—17

Recent British regulations—Powers of London Transport—Alternative fuels—Road user in Germany

The Minister of Transport has recently made a number of regulations or amendments to existing regulations effecting road motor vehicles.

The Road Vehicles Lighting (Special Exemption) Provisional Regulations, 1940, which are dated December 12, in effect give exemption from the Road Transport Lighting Act, 1927, to vehicles used by the armed forces in certain circumstances. The requirements of that Act for the time being are not to apply to vehicles in use by the Naval, Military, or Air Force authorities for special exercises or for the purpose of meeting actual or expected invasion. In the case of special exercises it is necessary that written notice should be given at least 24 hours before the exercises take place by the Naval, Military, or Air Force commander to the Chief of Police in every district in which the roads to be used are situated.

The effect of the Motor Vehicles (Definition of Motorcars) (No. 2) Provisional Regulations, 1940, dated December 20, is to raise from 2½ to 3 tons the maximum unloaded weight of vehicles which are permitted to travel at 30 m.p.h. instead of the former 20 m.p.h. The maximum weight for vehicles with producer gas plant or gas cylinders for their propulsion are raised from 3 to 3½ tons. On December 20 the Minister also signed the Motor Vehicles (Construction and Use) (Amendment No. 3) Provisional Regulations, the effect of which is to increase the width of the motorcar class of vehicle, which includes light goods vehicles, from 7 ft. 2 in. to 7 ft. 6 in.

Reduction in Number of Traffic Commissioner

The number of persons required by Section 63 of the Road Traffic Act, 1930, to constitute the traffic commissioners for any given area was reduced to one by the Traffic Commissioners (Reduction in Number) Order, 1940 (S.R. & O. No. 1797 of 1940), which was passed as an Order in Council on August 15 last. The one person specified is "the person who, immediately before the making of this Order, was the chairman of the commissioners or, if the office of chairman was then vacant or if that person subsequently vacates office, shall be appointed in the same manner as the chairman is required by that section to be appointed."

Dartford Tunnel Extension of Time

One of the most important partly-completed road works upon which work has been suspended for the duration of the war is the Dartford tunnel, of which some details were given at page 769 of our May 31, 1940, issue. The Dartford Tunnel Committee applied to the Minister of Transport for an Order under section 1 of the Special Enactments (Extension of Time) Act, 1940, in respect of the powers conferred by section 6 of the Dartford Tunnel Act, 1937, for the compulsory acquisition of lands, the time for the exercise of which is limited by section 16 of that Act. Due opportunity of making representations was afforded to persons likely to be affected, and the Minister did not deem it necessary to hold a local inquiry. The Minister satisfied himself that an extension of time was expedient by reason of circumstances attributable to the war, and on November 5 last made the Dartford Tunnel Act, 1937 (Extension of Time), Order, 1940. This Order (S.R. & O. No. 1946 of 1940) extends for a period of three years the time limit for the compulsory purchase of lands.

Further restrictions on road travel in Holland have been enforced by the occupation authorities, and the number of taxis has been reduced drastically. Strict control is exercised on the use of taxis, which is permitted for urgent purposes only. As a result of these measures bicycles are being used in increasing numbers. Amsterdam has introduced the first bicycle-taxis, two-wheel two-seat chairs drawn by the taxi driver on an ordinary bicycle, as we recorded in our December 27, 1940, issue. We are indebted to "Vrij Nederland" for the accompanying illustration. These vehicles are rather similar to the bicycle rickshaws used for a short period in the streets of Shanghai about 15 years ago

Powers of London Transport

Since December 4 last the London Passenger Transport Board may run any public service vehicle for a distance not exceeding five miles on any road outside the London Passenger Transport Area for the purpose of carrying passengers in cases where a railway service has been interrupted through causes directly or indirectly due to enemy action, notwithstanding any limitation imposed by the London Passenger Transport Act, 1933. The Order authorising this, which was made by the Minister of Transport on December 4, is entitled "The London Passenger Transport Board (Public Service Vehicles) (No. 2) Order, 1940. It was made in virtue of the Minister's powers under Regulation 56 of the Defence (General) Regulations, 1939.

"Grouped" Vehicle Insurance

Since September, 1939, insurers have agreed for periods of three months at a time to continue and extend, without any general increase in rates, existing policies for "grouped" motor goods vehicles, although the Emergency Powers (Road Vehicles & Drivers) Order, 1939, removed cer-

XUM

G.W.R. parcel van now running in service on low pressure coal gas. The two views show the envelope in its collapsible frame before and after inflation

tain restrictions on "A," "B," and "C" licences under the Road & Rail Traffic Act, 1933. This arrangement was extended until November 30, 1940, and the insurers have since agreed to extend the arrangement until February 28, 1941.

Road Haulage Wages

The Minister of Labour on December 15 confirmed the proposals of the Road Haulage Central Wages Board for an increase in pay for road haulage workers to take effect from December 23. Regular adult workers received an increase of 3s. 6d. and juniors of 1s. 9d. a week.

Government Producer Booklet

H.M. Stationery Office has just published at the price of 3d. a booklet on the maintenance and operation of the Government gas producer for road vehicles, the design of which was evolved under the auspices of the Hartley Committee. It comprises five pages of text and three pages of drawings. The matter of air leaks, leading to rapid fire-spreading, is given great emphasis, and details are given of the upkeep of the various items in the plant.

The Ridley Report

From information received it seems clear that the Government does not intend to publish the mysterious Ridley report on alternative fuels for road transport, although as long ago as September last the Secretary for Mines said that the report was in his hands and he thought it worthy of a debate in the House of Commons.

Producer Gas Fuel

At an early date the Ocean Coal Co. Ltd., of Cardiff, expects to be in a position to supply quantities of Oco, an anthracite fuel for producer gas vehicles. It conforms to the specification laid down last year by the British Coal Utilisation Research Association, and is said to have a potential tar content of 7 oz. per ton. The moisture content is claimed to be 3·5 per cent., the volatile matter 5 per cent., the ash content 4·5 per cent., and the fixed carbon 87 per cent. Before marketing this fuel is to be screened to between $\frac{1}{4}$ in. and $\frac{3}{8}$ in. square mesh.

Gas Vehicles on the G.W.R.

During the war of 1914-19 the Great Western Railway made use of low-pressure gas for propelling some of its road vehicles, and the practice has been resuscitated recently, but with improved equipment. Low-pressure storage has been used simply because of the availability of equipment, but it is hoped to make use of the much wider range of operation given by high-pressure storage as soon as alloy-steel bottles and compressing plant are readily obtainable. The G.W.R. parcels van illustrated is fitted with a bag of 350 cu. ft. capacity which is restrained by a collapsible steel frame; this frame expands on the bag being filled and drops as the gas is used. The capacity is approximately equivalent to $1\frac{1}{2}$ gal. of petrol, so that in normal delivery work the bag must be filled twice. Practically the only modifications to the engine are the addition of a gas carburettor and a change-over valve to enable the vehicle to be run on petrol.

Methane Applications

Thirty 3-ton refuse vehicles operated by a transport department in South London are being converted to operate on methane obtained from the corporation sewage works. Each vehicle is to carry four cylinders holding an aggregate of 1,400 cu. ft. of free methane compressed to 3,000 lb. per sq. in. The contents of each cylinder are said to be equivalent to $1\frac{3}{4}$ gal. of petrol if the CO_2 is not extracted from the gas and to $2\frac{1}{2}$ gal. if the CO_2 is extracted.

Gas Producer Progress in Spain

Restrictions on the use of petrol in Spain, together with the high prices ruling, have led to the general adoption in that country of gas producer installations for road motor vehicles. The Government is encouraging this development and a special commission has been created, under a recent decree, to co-ordinate the efforts of inventors and manufacturers in the production of the most practical and economical types. The fuels immediately available are anthracite smalls, charcoal, and hardwood, and vehicles are already running on these fuels, either singly or combined. The commission will explore the possibilities of a fuel distilled from the shales and lignites which abound in Spain, with a view to making the country self-supporting in the matter of motor fuel.

Petrol Situation Abroad

New petrol restrictions came into force in Germany on December 4. In British Guiana petrol rationing came into effect on January 2. The problem of petrol and fuel oil supplies in French Morocco was described in Casablanca on December 29 as very serious. It was announced on January 15 that Canada might have to ration petrol. Scarcity of supplies and reduced allowances were made known in Eire on January 13. Rationing was established by decree in Russia on December 10. Turkey decided to restrict supplies on November 14.

Road User in Germany

A recent road census revealed a remarkable increase in the number of cyclists on German roads. There are now over 21 million registered cyclists in Germany, between 2 and 3 million of them are using the interurban main roads daily, and 15 million the streets in towns. Of every 100 street users, 60 to 65 are cyclists, 20 to 25 car users, and 10 to 15 pedestrians. Germany has some 212,000 km. of interurban main road, 191,000 km. of streets in built up areas, and 8,000 km. of special cycle tracks.

Electric Road Vehicles in Wartime

Some considerations on the field of utility of the electric battery vehicle, based on railway experience in the 1914-19 war

By J. DALZIEL, formerly Assistant Electrical Engineer, L.M.S.R.

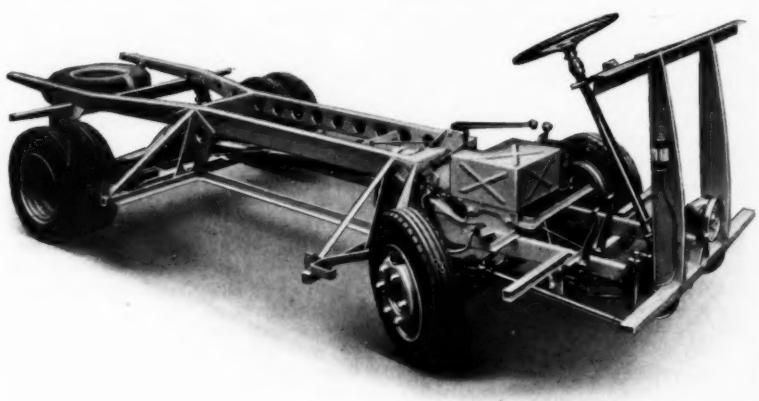
DURING the last war the railways quickly found themselves in the position of having to handle increased road traffic in face of heavy increase in the cost of horse haulage and difficulty in adding to their horse establishment. Mechanical road haulage on the railways was then in its early stages of investigation and most of the large railways had some petrol and steam vehicles under trial. These fleets were small in number and most of the goods and parcels collection and delivery was done by horses. Additional petrol and steam vehicles were little less difficult to obtain than horses, and petrol was rationed and increasing in cost, though this aspect of the situation was partly relieved on some of the railways by the use in substitution of petrol of a hydro-carbon bye-product of oil gas manufacture. Though gummy and smelly this spirit was quite efficient on vehicles with carburetters suited to it.

When then it became essential to augment the railway road haulage facilities it was decided that the new vehicles should be electric. Further considerations upheld this choice. While petrol was rationed, costly, and scarce, electric energy was solely home produced. The greater simplicity of operation permitted of easier training and made less demand for skill on the part of drivers; this factor arose from the absence of change-speed and reverse gears, from the whole control of starting and stopping—apart from the brakes—being effected by simple rotary manipulation of a controller, and from driving-motor movement being bound up with that of the vehicle, current being consumed only while travelling and for propulsion only. Electrics were thus much better suited than petrols to work services with frequent stops and short runs, *i.e.* of the door-to-door type in which competition of mechanical vehicles with horses is extremely difficult. The greater simplicity and smaller number of the mechanical parts compared with those of the petrol machine made maintenance easier and cheaper and ensured the machines working with less loss of service for repair and adjustment. There was in those days, as there is today, a small gain in licensing charges.

Metrovick electric battery 25-30 cwt. delivery van

On the other hand it had to be recognised that the battery definitely limited the radius of action, and it was necessary to set out accordingly the character and length of the routes to be worked. Battery-charging arrangements also presented some complications. The maximum speed of the electrics was low, though this was counterbalanced to some extent by quicker acceleration in the early stages of starting, by a more even maintenance of speed, and by much easier methods of control. Some reduction in depreciation charges accrued from the chassis being simpler and cheaper and less subject to racking stresses so that it could be allocated a longer life than in the case of the petrol vehicle; on the other hand this was partly counterbalanced by the cost of the battery and provision for its removal.

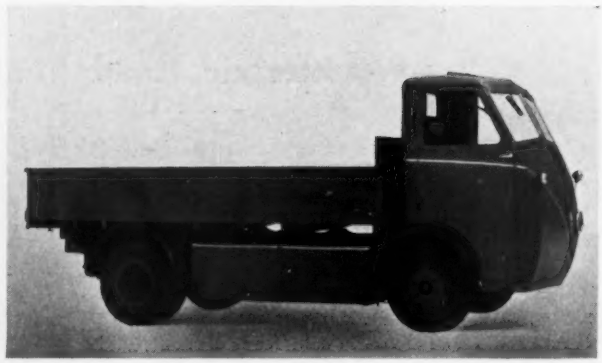
On certain railways it did not prove difficult to arrange workings and duties to suit the electrics, and during the war and early post-war years during which petrol rose as high as 4s. 6d. per gal., the electrics justified themselves and the service they gave was thoroughly satisfactory as compared both with the horse operation displaced and with what would have been the cost had petrol vehicles been installed.



Metrovick electric battery lorry chassis

XUM

Wilson electric battery runabout



Tilling-Stevens 2½-ton electric battery lorry

In 1917 the cost of horses had risen to 46s. per horse week, and on a total of 50 motors working in the goods department of one railway the saving per motor per annum amounted to £240 odd, the horses displaced per motor being approximately three, and the total saving on the 50 vehicles approximately £12,000 a year; even taking a horse week cost of 20s. there was a yearly saving of approximately £2,900. As regards comparison with petrol, which was then rather over 2s. per gal., the existing petrol vehicles operated on different classes of traffic and longer routes better suited to bring out their advantages; had they been set to do the work of the electrics it is a fair figure that they would have cost on the average about £50 a year more than the latter, savings being derived mainly from cost of current compared with fuel and from reduced cost of repairs, sundries, and tyres.

Notwithstanding the exceptional wear and tear of the war years, aggravated in some cases by lack of adequate shopping and maintenance facilities, and in the case of the Edison batteries by the necessity of using a substitute for the proper electrolyte which was not obtainable, most of the vehicles lived out or exceeded the 10 years allocated to them, and but for other circumstances might have continued in satisfactory work much longer. But it proved more difficult to arrange suitable routing and battery-charging time for them after the grouping of the railways, and the low maximum speed did not make for their popularity among the working staff, though investigation always showed that this never impaired working efficiency to any extent, especially in the busier towns. An undisputable advantage of the petrol machine was its availability for service at all hours and the ability to go anywhere and do any additional mileage as and when required, in contrast with the limitations of the electric.

With the 1923 grouping a new era dawned as regards the use of mechanical road transport on the railways, and with it for the time being a set-back of the use of electrics. In the first place the petrol vehicles released from Government service after the war, mostly at very low prices, gave an impetus to the adoption and use of these such as to put alternatives out of consideration. Then, whereas the number of electrics manufactured had never been sufficient to support the use of real mass-production methods, with the decline of this number it became still less possible to build electric chassis on terms competitive with petrols notwitstanding their greater simplicity and fewer parts. Further, the attention concentrated on the development of petrols led to continuous improvement in design which radically reduced cost price and increased reliability, while diminishing repair and maintenance costs; at the same time petrol cost declined.

While then there are some few electrics, mainly very old, left on the railways and among general users, the great post-war fleets of mechanical vehicles have comprised very few electrics.

Within recent years, however, there have been orders for a few new electrics, mostly executed by firms new to the business, and a revival of manufacture has apparently definitely begun. Its basis must obviously rest upon the advantages shown by electrics under present-day conditions in some substantial directions akin to those set out above which dictated the same course 25 years ago. Examining these under today's conditions, petrol according to the best of the writer's recollection has never recently been at its pre-1914 prices and is approaching 1916-17 prices now, besides being strictly rationed. Current is much cheaper and has been cheaper still; also with the advent of rectifiers and individual vehicle chargers, battery-charging is simpler and more efficient and requires less manual attention than in the days of motor generators. (Current was mostly d.c. in the earlier days.) Motors and control gear are of more modern and robust design, and the same applies to chassis construction, in which has been embodied the improved principles of design and methods of manufacture of the petrol machine.

First cost as well as repair and maintenance costs are therefore appreciably lower, batteries appear to be about the same price but are guaranteed for a 50 per cent. longer life, and appear in practice to give still longer service beyond this.

The effect of these improvements is to restore the factors in favour of electrics over the much improved petrols in at least some classes of road motor services, particularly in that already instanced of door-to-door service on a mileage of say 100 to 200 miles a week wherein horses still compete successfully with petrols. The answer to the problem created by any shortage of horses, then, would appear to be as before, namely, the use of electrics in these services. To meet petrol restrictions such use might be extended into services for which petrol has established itself as superior to horse haulage as was done to some extent in the last war; the case now is not, however, as it was then owing to the existing fleets in their very large numbers. The adaptation of these for the use of gas in some form is naturally more attractive than the purchase of new vehicles. These adaptations, including producers, were known and used during the last war, but have all, and especially producers, been much improved. With none of them, and especially with producers, is it possible to get the full petrol power output from the engine, but it is attractive that with all of them an addition to the existing mechanism suffices for the conversion and no reconstruction is necessary, while the vehicle retains its main characteristics. It is possible, and has been done, to convert petrols to electric, but a fairly radical and expensive reconstruction is necessary and the top speeds of the former petrol machine would have to be relinquished. It may be considered, therefore, that the provision of new electrics is better. As compared with the gas-fitted vehicles the new electric would be considerably more costly but would compare favourably in simplicity, reliability, and ease of operation, as well as being cheaper to maintain.

For any new vehicles required, particularly for work of the class above indicated, the electric has certainly a sound claim, not only for wartime conditions but for normal requirements after the war. Steam on pneumatic tyres would probably be a close competitor, particularly for heavy work.

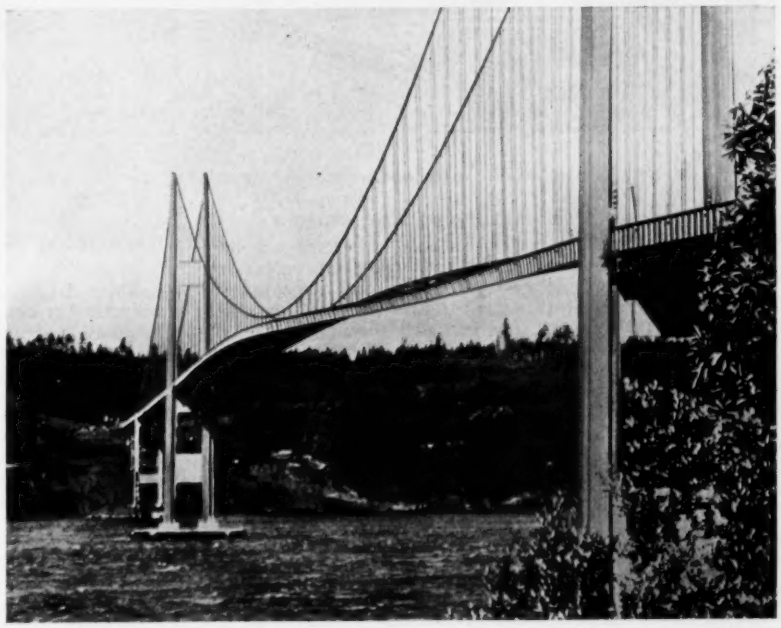
The Collapse of Tacoma Narrows Suspension Bridge

With suspension cables spaced only 33 ft. apart, and 8-ft. stiffening girders the 2,800-ft. main span was susceptible to wave action in wind

IT is now possible to give some additional particulars of the failure under wind pressure of the 2,800-ft. central span of the Tacoma Narrows suspension road bridge on November 7. This bridge was notable as having the third longest suspension span in existence, exceeded only by the Golden Gate, 4,200-ft., and, second-longest, the George Washington, 3,500-ft. span. The Tacoma bridge, opened as recently as July last, was the most slender suspension bridge in proportion to its size, both laterally and vertically, ever built. The cables on each side of the roadway were only 39 ft. apart, or $\frac{1}{72}$ of the central span; the stiffening girders were 8 ft. deep, $\frac{1}{350}$ of the span.

Disturbing oscillation in the bridge had been under careful observation since its building, and vertical wave movements up to 50-in. amplitude had been measured. Various means had been tried to check this tendency, and a $\frac{1}{100}$ scale model was used to which horizontal and vertical forces were applied by a series of electro magnets to simulate wind pressures. As a result of these experiments, a point 300 ft. from the anchorage in each of the side spans was tied down by cable to the ground below. Under a moderate gale these cables snapped,* however, and subsequently smaller models were subjected to wind pressure in a wind tunnel. Among other measures tried was the streamlining of the stiffening members, and this almost completely suppressed disturbing wind effects on the model tested. Unfortunately, it had not been possible to apply these principles to the bridge itself before November 7. The photograph reproduced, taken just before collapse, shows the mid-span stiffening girders much distorted under wind pressure and suggests that they were the first members to fail, due probably to a kink or shear rupture. Another photograph, taken during collapse, and reproduced in our American contemporary, *Engineering News Record*, to which we are indebted for some of these details, shows the roadway and stiffeners actually falling into the Narrows, and also a pair of diagonals of the lateral system broken loose and hanging down below the floor system.

Professor F. B. Farquharson, Associate Professor of Civil Engineering at the University of Washington (Seattle), who directed the model tests and had been watching the bridge, was actually on the main span when it failed. He reports that the deck tilted from side to side more than 45 deg., that the edges of the deck had an up-and-down movement of 28 ft., and that the acceleration in the movement of the deck at times exceeded that of gravity. Professor Farquharson was taking motion pictures of the waving and twisting of the span when it gave way in a 42-m.p.h. wind, though higher velocities had previously been noted without damage to the structure. The particular velocity causing collapse set up vertical wave action in the central span that developed a lag or difference in phase between the opposite sides of the bridge, causing excessive rolling motion in the decking. Failure of the stiffening girders and lateral bracing followed, suspenders snapped, and sections of the floor system several hundred feet in length fell out successively, leaving only stubs of roadway projecting from the towers. Relieved of so great a load the main suspension cables flew upwards, and allowed the weight of the 1,100-ft. side spans, which remained comparatively intact, to pull over the towers 12 ft. out of vertical outwards. The side span roadways sagged 30 ft. and their stiffening girders and floor systems were wrenched and deformed. The damage to the towers consisted of buckled plates and angles, especially near the piers, into which they are securely bedded and which suffered no damage. The main cables showed no movement in the saddles despite violent bouncing.



Tacoma Narrows suspension bridge just before the collapse of the central 2,800 ft. span. Note the wave action caused by the wind resulting in the decking swaying to an angle of 45 deg. at its centre; at one moment one side of it was 28 ft. higher than the other

The Tacoma Narrows bridge, built by the Washington Toll Bridge Authority with Federal funds, cost $6,400,000. If the towers and cables justify such action, it is proposed to rebuild the bridge at once, and the dismantling of the flooring of the side spans is already in hand. The bridge was designed by a well-known suspension bridge authority and consulting engineer in New York in co-operation with the Washington Toll Bridge Authority.

* It seems probable that these tie-cables were replaced by stronger ones, as it is stated that such cables "are credited with having prevented the violent waves in the main span from being transmitted to the side spans"

MADRID TRAMWAYS COMPANY.—The report for the year ended June 30, 1940, describes the damage resulting from the Civil War, and estimates the loss to the company at over 13 million pesetas. Of the 574 cars in service in July, 1936, only 158 remained at the end of the war, and all the 43 motor-buses had disappeared. Comparing results with those of 1935-36, receipts in 1939-40 had fallen from 28,330,000 pesetas to 24,960,000 pesetas, by 11·91 per cent., and the number of passengers from 200 to 170 millions, or 14·48 per cent. Profit in 1939-40 amounted to 3,412,207 pesetas, which, together with the net amount brought forward, and deducting the deficit of 1936-37, is carried forward.

XUM

Overseas Notes

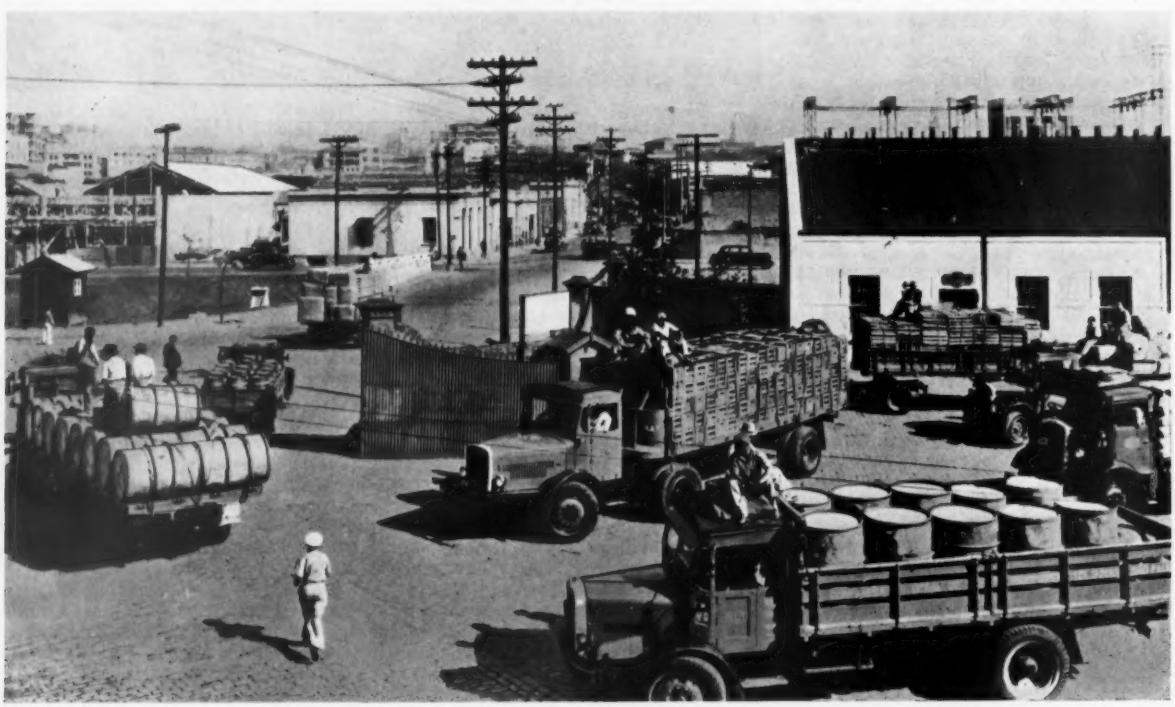
Two new 28-seat buses being placed in experimental service in Buenos Aires; that on the right is a Ford

Buenos Aires Transport Corporation

Arrangements are stated to have been concluded for a loan to this corporation of 40,000,000 pesos to enable it to complete the expropriation of the bus and *colectivo* lines which have declined to accept shares in that concern in payment of their assets. The fact that the non-incorporated entities carry a considerable proportion of the city's passenger traffic has been one of the chief stumbling-blocks in the way of the complete co-ordination of the various services. The matter was finally settled at a meeting between the Minister of the Interior, Dr. Miguel J. Culaciati, representatives of the corporation, the control board and banking officials representing the syndicate which will advance the necessary funds. New model buses are now being placed in experimental service by the corporation, two of which are illustrated above.

Manila Road Transport

The Manila Railroad Highway Motor Transportation operates in connection with and as feeders to the Manila Railroad Company's services, the Benguet Auto Line and the Luzon Bus Line. Equipment in 1939 totalled 237 units, including 152 passenger buses and 69 freight and express trucks. The Benguet line carried 770,153 passengers and 6,712 metric tons of freight in the first half of 1939 and in the same period the Luzon line carried 1,435,718 passengers. Receipts for the whole of the Highway Transportation system amounted to P.792,222 and expenditure to P.587,346, in the half-year to June 30, 1939.

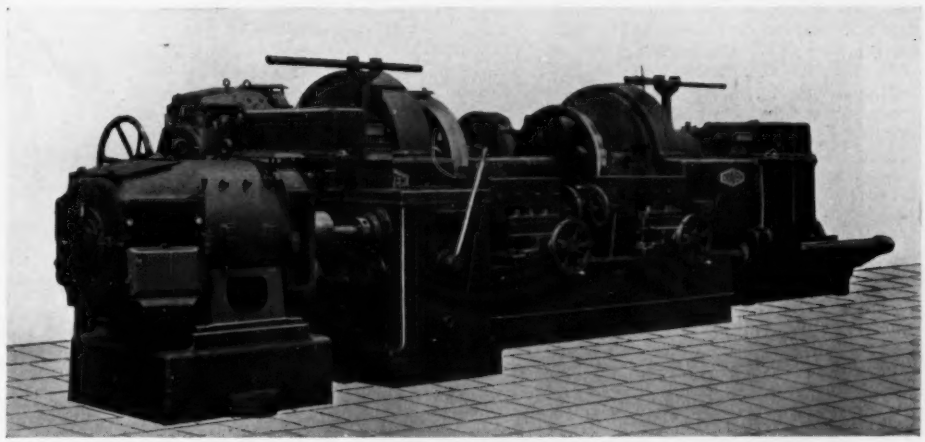


Part of the fleet of 70 operated by a South American haulier. In the foreground are Thornycroft 7-8 ton four wheelers, one with a 12 ft. 8 in. wheelbase for solo work, and the other a tractor of 8 ft. 8 in. wheelbase for a single-axle attachment loading up to 12 tons

A MODERN HEAVY-DUTY WHEEL LATHE

Recently supplied by Craven Bros. (Manchester) Ltd., to a leading British railway

THE machine illustrated and described is a Craven modern heavy-duty carriage and wagon wheel turning and grinding lathe. It has two 4 ft. diameter faceplates, two front turning rests, and two rear grinding heads, and is capable of turning or grinding simultaneously a pair of carriage wheels 3 ft. 7 in. diameter on tread. It is arranged for direct-current electric drive; the main drive is by a 50 h.p. variable-speed motor through a change-speed gearbox, each grinding spindle being driven by a 35 h.p. variable-speed motor through multiple vee belts. The multiple tooling layout on each rest comprises two circular-tread rough-turning tools and one flange topping tool, flange rough forming and full-profile forming tools. Tool changing is unnecessary except for re-grinding. The three drivers on each faceplate are of the serrated cam type with hand resetting to grip tyres on the inside lip.



Craven heavy-duty carriage and wagon wheel turning and grinding lathe

The bed is of heavy box-section design with broad ways for the headstocks and rests and is provided with machined tee-slots for the headstock locking bolts; the central portion of the bed is designed to enable cuttings to fall clear into trolley bins arranged in the pit under the lathe. The main driving headstocks are provided with large diameter close-grained cast-iron spindles mounted in capped bronze bearings; the front bearings are 16 in. diameter × 16 in. long, and the rear bearings 10½ in. diameter × 12 in. long. Six bolts are used to retain each front cap in position and four bolts are provided for each rear cap. Ball bearings take the end thrust of the spindles, which are fitted with large-diameter steel sliding sleeves, having endwise adjustment by means of screws with long bronze nuts and handwheels, and provided with locking device. The sleeves are arranged for use with split collets to support the wheel-sets from the axle journal. The double reduction gear arranged on each headstock is of the spur type; the gears are steel and the shafts are of exceptionally large diameter mounted in long bronze bearings. The bed shaft pinions are sleeved and rotate in bronze bearings, so arranged to relieve the main shaft from bearing loads. These pinions are totally enclosed and all gearing is completely protected; the gears have grease lubrication and the shafts the one-shot oil feed system. The spindle speeds provided allow cutting speeds of approximately 10 to 20 ft. a minute on wheels 3 ft. 7 in. diameter on the tread. An extra range of speeds is provided, suitable for grinding wheels of this diameter.

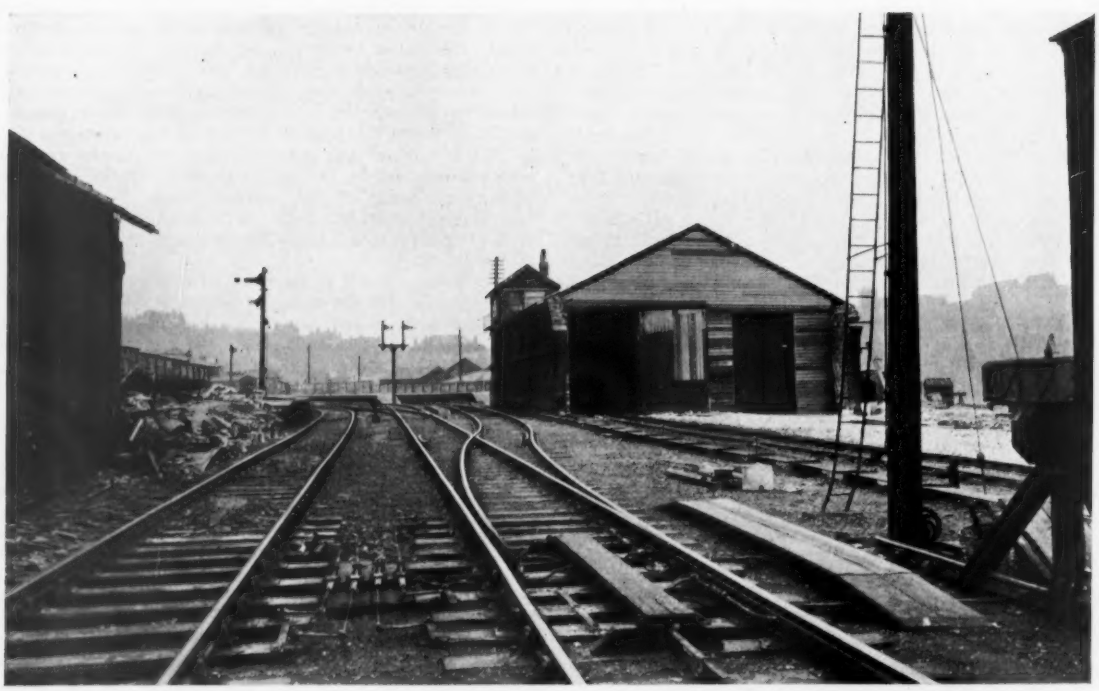
The main drive is by means of a variable-speed d.c. motor mounted on a baseplate and direct coupled through reduction gear and two-speed gear box to the main driving shaft along the bed. The loose headstock quick traverse gear consists of a large-diameter screw arranged at one end of the bed, provided with spur reduction gears and slip clutch driven from a 5 h.p. reversing motor. The motor is mounted on a baseplate attached to the main bed and controlled from push buttons placed at the operator's working position. A long bronze nut is arranged in the loose headstock for the traverse screw, and stops are provided on the bed to which the headstock is adjusted when placing the wheels in position.

The faceplates are of heavy deep section, adequately ribbed, provided with tee-slots and bolted direct to the spindle flange. Steel spur driving rings are bolted to the faceplates, and each faceplate is provided with three cam-operated serrated driving dogs, made in high-tensile hardened steel and mounted on spindles which are free to rotate in the steel driving brackets attached to the faceplates. The brackets are adjustable for varying diameters of wheels, and after adjustment are bolted firmly to the faceplates. When the drivers are in use the initial grip is obtained by hand, the cams being rotated by the operator whilst the faceplates are slowly rotating, after which, when the cutting takes place, the driving dogs automatically adjust themselves to the wheels. The driving dogs are released automatically when the finished turned wheels are taken from the lathe, after which the operator must return the cams to the zero position ready for the next pair of wheels. The two turning rests are of the makers' latest design with slides and screws protected from cuttings and swarf, and fitted with flat-top tool slides supporting the tools in fixed positions.

The tools on each rest consist of two circular tread rough-turning tools and one circular flange rough top-turning tool, with tool holder, one flange rough forming and chamfering tool with toolholder and one full flange-and-tread profile forming tool in fixed position on rest. The flange rough-forming tool holder can be adjusted forward, allowing the cutter, which is arranged with a knife edge, to face the inside rim of the new tyres. The feed motion consists of a crank disc with rod connection to the feed ratchet box; the disc is arranged in bearings in the lower slide with enclosed spur gear drive from the bed driving shaft. The feed variation is obtained from the adjustable crankpin in the disc, and four rates of feed are provided. A gauging device for checking the turned tyre diameters is fitted. The headstock locking gear consists of large-diameter lock bolts arranged with pneumatically-operated eccentric and lever type of tightening gear, both bolts being clamped simultaneously. The wheel grinding portion of the lathe comprises two heavy grinding heads mounted on massive compound slides and an extension bed at the rear of the lathe, the whole arrangement forming one unit, capable of grinding the treads of both wheels simultaneously. Each grinding head is provided with transverse and longitudinal hand adjustment along the compound slides, through hand wheels located in positions convenient to the operator. The extention bed is planed on the side and securely attached to the back of the main bed by turned bolts in drilled holes.

XUM

British Railways and the War—54



Another example of the rapid repair of air raid damage. The upper picture shows L.N.E.R. engineers at work on the damage caused by a bomb during a recent raid on the North East Coast. A few hours later the tracks were repaired and reopened for traffic. The damaged buildings were made good and the debris completely cleared within a few days, and the scene then assumed the form shown in the lower view. We are indebted to the L.N.E.R. for these pictures

RAILWAY NEWS SECTION

PERSONAL

The London Midland & Scottish Railway announces the appointment of Major F. A. Pope, Superintendent of Operation, as Manager of the Northern Counties Committee, Belfast, in succession to Major Malcolm S. Speir, whose appointment as Chief Officer for Scotland, L.M.S.R., as from April 1 next, we recorded in our January 3 issue.

REGIONAL TRANSPORT COMMISSIONERS

The Minister of Transport has appointed Mr. Trevor Morgan, M.C., K.C., J.P., Regional Transport Commissioner for the South Western Region, to be Regional Transport Commissioner for Wales, in succession to Mr. A. T. James, K.C., whose death we recorded in our January 10 issue.

Sir Alfred Robinson, K.B.E., C.B., M.Inst.T., has been appointed to succeed Mr. Trevor Morgan as Regional Transport Commissioner for the South Western Region.

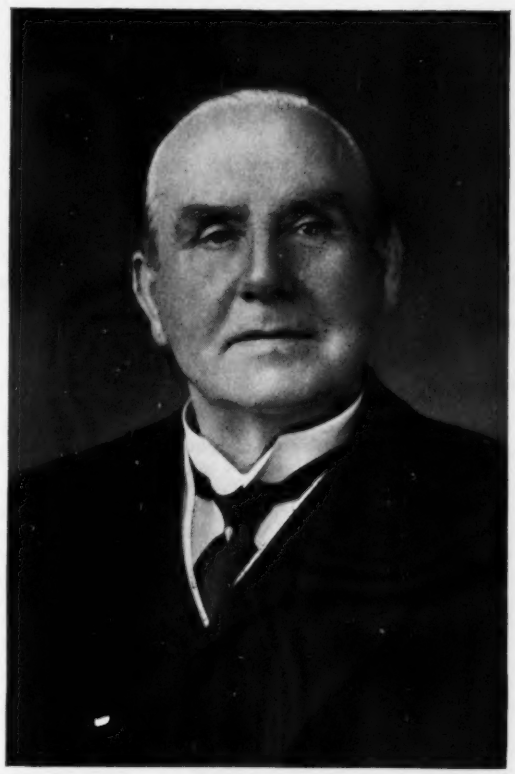
The Minister of Transport has been informed by the Appointing Trustees acting under the provisions of Section 1 of the London Passenger Transport Act, 1933, that they have re-appointed Mr. Charles Latham to be a Member of the London Passenger Transport Board for a further period of three years from January 20, 1941, on the expiration of his present appointment. (Mr. Latham, who is an accountant by profession, is the leader of the London County Council. He has been a Member of the London Passenger Transport Board since 1935.)

At the meeting of the General Managers' Conference held at the Irish Railway Clearing House on January 14, 1941, Mr. M. F. Minnis, General Manager, Belfast & County Down Railway, was unanimously elected Chairman for the conference for the year 1941.

We regret to record the death, on January 16, of Mr. A. M. Clark, lately Superintendent General, Commercial & Transportation Department, Bengal-Nagpur Railway, aged 43.

Lord Davies, a Director of the Great Western Railway, was one of the first three persons to be admitted a Freeman of the newly-created borough of Barry, on January 15.

The Right Honourable Sir Charles Cheers Wakefield, Bt., G.C.V.O., C.B.E., Viscount Wakefield, and Baron Wakefield, both of Hythe in the County of Kent in the peerage of the United Kingdom, whose death on January 15 we recorded briefly last week, was born in Liverpool on December 12, 1859. He was the youngest son of Mr. J. Wakefield of H.M. Customs, and after being educated at the Liverpool Institute, he entered the office of an oil broker and made several journeys round the world. He came to London in 1891, and for a time was associated with one of the large American oil corporations. In 1899 he founded the firm of C. C. Wakefield & Co. Ltd. which rapidly achieved both fame and prosperity as a manufacturer of lubricating oil and appliances. He was elected to the Court of Common Council in 1904, and served as Sheriff in 1907 and 1908. In 1909 he was elected Alderman of the Bread Street Ward, and from November, 1915, to November, 1916, was Lord Mayor of London. On the visit of President Fallières to the City in 1908 he was knighted; at the close of his year of office as Lord Mayor he received a baronetcy; two years later he was made C.B.E.; he was created a Baron in 1930; and a Viscount in 1934. Lord Wakefield was an exceptionally generous philanthropist, and an ardent supporter of the British Empire. In connection with his lubricating oil business he rendered outstanding services to the development of all forms of transport, rail, road, and air, and many of his outstanding benefactions have taken the form of financial support to enterprises designed to promote aviation and motoring. He was a Vice-President of the Institution of Aeronautical Engineers, presented the Wakefield Gold Trophy for motoring speed, and was twice President of the Motor & Cycle Trades Benevolent Fund to which institution he made a donation of £10,000. We refer to some aspects of Lord Wakefield's railway associations in an editorial note on page 81.



The late Viscount Wakefield of Hythe, G.C.V.O., C.B.E.

[*Russell*] [*London*

The following appreciation by Sir Follett Holt was published in *The Times* for January 17:—

"The country has lost in Lord Wakefield not only a great business man but a kindly, farseeing, and generous citizen, who shared all his devotion between his wife and his country. What he did to help to make the Empire air-conscious is well known, but there is one other among his countless benefactions and activities of which I have special knowledge. The Tower Hill Improvement Scheme appealed deeply to his imagination and to his love of the City of London. The Tower, the historic centre of the Empire, was surrounded, as he found it a few years ago, with a number of semi-derelict and sordid buildings. By his aid and great generosity most of these have already been acquired and some effaced. From the ashes of war the Tower will appear in a new setting of green and open spaces, and this great gentleman and citizen is assured of a permanent place in the memory of the Empire as Lord Wakefield of Tower Hill."

Lt.-Colonel G. S. Leverton, who has recently been appointed Manager, Road Motor Services, South African Railways & Harbours, is a native of Port Talbot, South Wales, and joined the Cape Government Railways in 1903 as a traffic recorder when he was 14 years old. For the first seven years of his service, during which he advanced to junior clerk, he served on the Cape Town suburban line, whereafter in quick succession he was transferred to

Lt.-Colonel G. S. Leverton
Appointed Manager, Road Motor Services, South African Railways & Harbours

Warrenton, Beaconsfield, De Aar, and Kimberley. He was promoted to Clerk in the Divisional Superintendent's Office at Kimberley in 1913. During the next fifteen years he served at Cape Town, Kimberley, Mafeking, Windhoek, Johannesburg, and again at Cape Town. In 1928 he was appointed Senior Clerk, and was for some years employed as Secretary to the General Manager's Staff Committee. He became Assistant Stores Superintendent at Durban in 1934, and in the next year was transferred to South African Airways as Commercial Assistant to the Manager of the newly-formed branch of the administration's activities. He was appointed Assistant Airways Manager in 1938 and acted as Airways Manager when Colonel J. Holthouse went to the U.S.A. in June last. In the same month Colonel Leverton was appointed Lt.-Colonel in command of the South African Air Force Depot at Germiston and the Bomber Transport Brigade. It is understood that he will continue to act as Airways Manager in addition to filling his new position.

Mr. H. E. Tucker, stationmaster, Penzance, Great Western Railway, retired on December 14 after 43 years in the company's service. Mr. Tucker is a West Countryman and began work at Newton Abbot station, later going to Totnes, and to Devonport in 1899. In December, 1909, he went to Bodmin, his first post in Cornwall, but later returned to Plymouth (North Road) as Chief Booking Clerk. He was appointed Stationmaster at Kingsbridge in March, 1920, and transferred in January, 1931, to Penzance. During the past ten years Mr. Tucker has been a notable and helpful member of the local Chamber of Commerce, and in 1937 and 1938 respectively, has been Chairman and President. Visitors to Penzance will miss his genial personality.

We regret to record the death on January 3, at the age of 84, of Mr. Robert Bradley Summerson, Chairman of Thomas Summerson & Sons Ltd., railway plant manufacturer. Mr. Summerson's father founded the firm over 70 years ago.

Major-General Alexander E. Davidson, D.S.O., M.I.Mech.E., has joined the local board of Vulcan Foundry Limited. Major-General Davidson was appointed Director of Mechanisation, War Office, in 1936, and in 1940 went to the Ministry of Supply. He joined the R.Es. in 1899 and was Secretary of the War Office Mechanical Transport Committee from 1910 to 1914. He served as A.D.C. to the King in 1935-36 and was President of the Institute of Mechanical Engineers in 1935.

Mr. H. C. Godsmark, General Manager of Huddersfield Transport and Operating Manager of the L.M.S.R. & Huddersfield Joint Omnibus Committee, has been appointed General Manager of Newcastle Transport & Electricity Undertaking, in succession to Mr. T. P. Easton, who retires in March.

Mr. H. E. Tucker
Stationmaster, Penzance, Great Western Railway, 1931–1940

The directors of the Highland Transport Co. Ltd. in their annual report refer with regret to the resignation of Mr. C. J. Foster, and they recommend in his place Mr. A. Yeaman, District Goods and Passenger Manager, L.M.S.R., Inverness.

We regret to record the recent death, after an operation in France, of Lionel Edouard Wiener, Professor at the University of Brussels. Professor Wiener, who was aged 61, was a keen student of railway operation and a prolific writer thereon. He has been an occasional contributor to the columns of THE RAILWAY GAZETTE for many years past.

Above: A soldier being served by a Salvation Army attendant from one of the L.M.S.R. portable canteens

Left: Princess Helena Victoria, The Minister of Transport, Lord Croft (Under-Secretary of State for War), Lord Stamp, and Mr. F. Montague (Parliamentary Secretary, Ministry of Transport), at the inspection on January 20

TRANSPORT SERVICES AND THE WAR—74

Civilian casualties in air raids—Portable canteens for troops— Transport control in Germany — Continental railway services

The publication by the Ministry of Home Security of the totals of civilian casualties as the result of air raids on the United Kingdom during December enables us to tabulate the figures for the last seven months of 1940, which cover the period during which Great Britain and its transport facilities were subjected to intensive attack; large scale bombing attacks began on June 18. The totals were divided as follows:

Month	Killed	Injured and detained in hospital	Total
June	78	155	233
July	258	321	579
August	1,075	1,261	2,336
September	6,954	10,615	17,569
October	6,334	8,695	15,029
November	4,588	6,202	10,790
December	3,793	5,044	8,837
	23,080	32,293	55,373

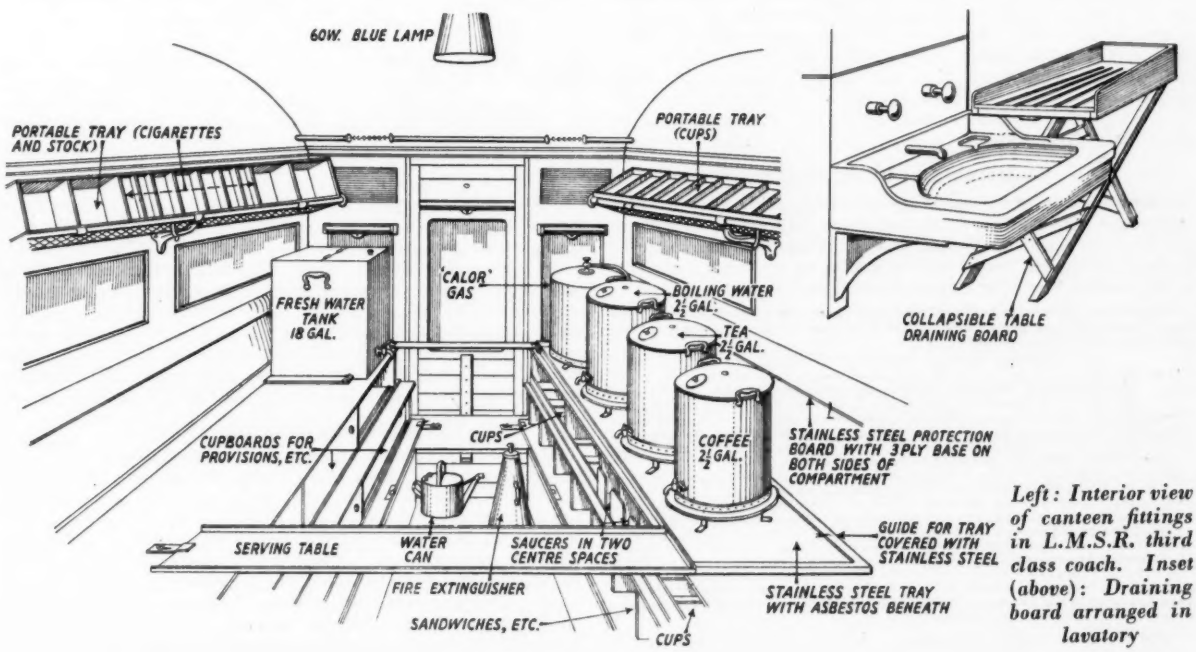
R.A.F. Raids on German Transport

The increasing intensity of our air offensive against Germany is demonstrated by some collated information recently prepared by the Ministry of Information relating to R.A.F. activities up to the end of 1940. At the end of September last, the number of target area attacks recorded was approximately 900, and at the beginning of the present year the figure had been increased to over 1,400. The word "attack" is used to indicate the bombing of a particular target area containing one or more different types of objectives. Several such area attacks are usually made in a single night's operations, and the classified list of bombed objectives over the first 16 months of the war exceeds 1,500. The number of individual towns involved in attacks is over 270. Railways and communications head the list with 459 attacks; docks and shipping account for 269; oil refineries and storage 254; aerodromes and seaplane bases 199; munition and aircraft works, military stores, and power stations 316; and other objectives 25.

Numerically outstanding among the attacks directed primarily against railways and communications is the total of major attacks on Hamm. Here the figure to January 1 was 82, but on many occasions more than one raid has been made in a 24-hour period. The first recorded was on June 2 and the most recent on November 17/18. Berlin itself has had 35 raids. The totals of other places where the major objectives were railways include the following: Aachen 8; Cologne 55; Danzig railway junction 1; Dresden 2; Düsseldorf 19; Koblenz 11; Krefeld 20; Mainz 3; Mannheim 34; München-Gladbach 7; Osnabrück 34; and Wesel 15.

L.M.S.R. Portable Canteens

On Monday last, January 20, the Minister of Transport, who was received by Lord Stamp, Chairman of the London Midland & Scottish Railway Company, inspected at Euston station a new type of portable canteen for the service of refreshments to members of the Forces travelling by long-distance trains. The train, on which the canteen is the first of its type and which will be in experimental use for a fortnight, was the 1 o'clock from London to Glasgow (Central) which leaves Euston on Mondays, Wednesdays, and Fridays, and returns at 1 p.m. from Glasgow (Central) on Tuesdays, Thursdays, and Saturdays. The principle of the experiment is the fitting up of portable equipment in a third class compartment as a canteen, with an adjoining compartment for storage purposes. The lavatory is fitted with a portable draining board for washing up. From the compartment members of the Forces can be served with tea, coffee, sausage rolls, meat pies, sausages, and other light refreshments either through the doorway or by tray to and from ordinary compartments throughout the train. The whole of the canteen equipment has been designed so as to be readily dismantled, and it is stated that a compartment can be equipped or reconverted to its original use in the space of 12 min. The stand for the tea and coffee urns and for the hot water boiler is fitted over the seat on one side of the compartment and the store cupboard for provisions is placed over the other seat. Across the doorway is placed a folding service table; portable trays for crockery, cigarettes, and so forth are fitted above the luggage rack on each side of the compartment. Two canteens on the above model are



Left: Interior view of canteen fittings in L.M.S.R. third class coach. Inset (above): Draining board arranged in lavatory

XUM

attached to the train, one at each end, and to operate the service the Y.M.C.A. and the Salvation Army are each providing two attendants. It is intended that one attendant will work the canteen compartment and the other will canvass adjoining coaches for orders. Although the midday service between London and Glasgow has been chosen for the initial experiment, a special feature of the canteen is that it can be fitted up very quickly in any corridor train when the need arises. The operation of the canteen and the provision of the food is being managed by the Y.M.C.A. and the Salvation Army, but the L.M.S.R. is co-operating in the loan of its technical staff, certain of whom will be on the train during its experimental runs, and the provision of facilities for experiment. The equipment used was manufactured in L.M.S.R. workshops.

Railway Control Centres

Much of the success achieved in keeping the trains running every hour of the day and night depends upon comparatively small numbers of men working in shifts in protected control offices in various parts of the country. An illustration of one of these was published at page 414 of our October 18, 1940, issue. Networks of telephone cables, duplicated in case of emergency, enable these railway controllers to be in touch constantly with details of the movements of every engine, carriage, wagon, train, and sets of men working the trains in their district. The railway controllers today are fitting into the timetables thousands of non-scheduled and special trains carrying troops, equipment, munitions, coal, foodstuffs, and supplies of every kind. Local traffics are dovetailed with long-distance trains, and diversions and re-routing are arranged as may become necessary owing to enemy action. Air raid warnings are logged and transmitted by the control staffs to various key points on the lines during raids; incidents are reported minute by minute; improvised services have to be set up at short notice according to circumstances; repair, food, troop, and Government traffic trains must be given priority; ambulance and first aid trains are moved into stricken areas; and evacuation specials are arranged.

Civil Defence Problems

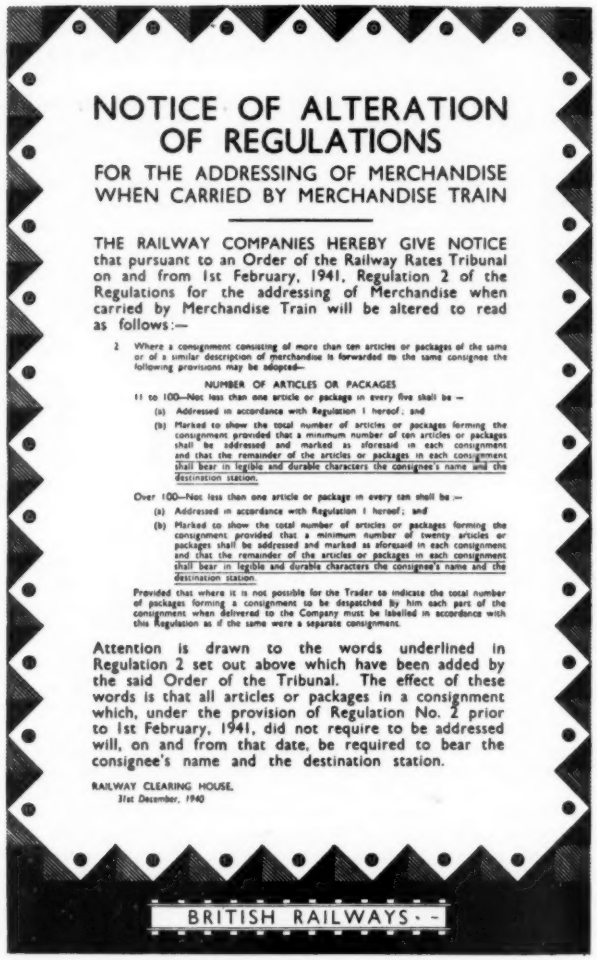
We are informed that the monthly publication, *A.R.P. News*, is inaugurating a confidential news service for the information of civil defence executives. In present circumstances, it is obviously not advisable to publish certain types of information which nevertheless would prove of great value to those persons who may have to tackle similar matters elsewhere, and it is the object of this news service to pass on, confidentially, facts unsuited to open publication. This service will be available only to the officers responsible for civil defence work, including, of course, railway and other transport executives. Those interested are invited to communicate with the Editor, *A.R.P. News*, 19, Mincing Lane, Blackburn, Lancashire.

Addressing of Merchandise

Alterations in the regulations for addressing merchandise carried by merchandise train are given in a notice issued by the Railway Clearing House. This states that, pursuant to an Order of the Railway Rates Tribunal, on and from February 1, Regulation 2 will be altered to read as follows :—

> 2. Where a consignment consisting of more than ten articles or packages of the same or of a similar description of merchandise is forwarded to the same consignee the following provisions may be adopted :—
>
> NUMBER OF ARTICLES OR PACKAGES
>
> 11 to 100.—Not less than one article or package in every five shall be :—
> (*a*) Addressed in accordance with Regulation 1 hereof ; and
> (*b*) Marked to show the total number of articles or packages forming the consignment provided that a minimum number of ten articles or packages shall be addressed and marked as aforesaid in each consignment *and that the remainder of the articles or packages in each consignment shall bear in legible and durable characters the consignee's name and the destination station.*
>
> Over 100.—Not less than one article or package in every ten shall be :—
> (*a*) Addressed in accordance with Regulation 1 hereof ; and
> (*b*) Marked to show the total number of articles or packages forming the consignment provided that a minimum number of twenty articles or packages shall be addressed and marked as aforesaid in each consignment *and that the remainder of the articles or packages in each consignment shall bear in legible and durable characters the consignee's name and the destination station.*
>
> Provided that where it is not possible for the trader to indicate the total number of packages forming a consignment to be despatched by him each part of the consignment when delivered to the company must be labelled in accordance with this regulation as if the same were a separate consignment.

The words in italics are those which have been added by the Order of the Railway Rates Tribunal. The effect is that all articles or packages in a consignment, which under the provision of Regulation 2 prior to February 1 did not require to be addressed, will therefore need to bear the consignee's name and the destination station.



NOTICE OF ALTERATION OF REGULATIONS

FOR THE ADDRESSING OF MERCHANDISE WHEN CARRIED BY MERCHANDISE TRAIN

THE RAILWAY COMPANIES HEREBY GIVE NOTICE that pursuant to an Order of the Railway Rates Tribunal on and from 1st February, 1941, Regulation 2 of the Regulations for the addressing of Merchandise when carried by Merchandise Train will be altered to read as follows :—

2 Where a consignment consisting of more than ten articles or packages of the same or of a similar description of merchandise is forwarded to the same consignee the following provisions may be adopted—

NUMBER OF ARTICLES OR PACKAGES

11 to 100—Not less than one article or package in every five shall be :—
(a) Addressed in accordance with Regulation 1 hereof ; and
(b) Marked to show the total number of articles or packages forming the consignment provided that a minimum number of ten articles or packages shall be addressed and marked as aforesaid in each consignment and that the remainder of the articles or packages in each consignment shall bear in legible and durable characters the consignee's name and the destination station.

Over 100—Not less than one article or package in every ten shall be :—
(a) Addressed in accordance with Regulation 1 hereof ; and
(b) Marked to show the total number of articles or packages forming the consignment provided that a minimum number of twenty articles or packages shall be addressed and marked as aforesaid in each consignment and that the remainder of the articles or packages in each consignment shall bear in legible and durable characters the consignee's name and the destination station.

Provided that where it is not possible for the Trader to indicate the total number of packages forming a consignment to be despatched by him each part of the consignment when delivered to the Company must be labelled in accordance with this Regulation as if the same were a separate consignment.

Attention is drawn to the words underlined in Regulation 2 set out above which have been added by the said Order of the Tribunal. The effect of these words is that all articles or packages in a consignment which, under the provision of Regulation No. 2 prior to 1st February, 1941, did not require to be addressed will, on and from that date, be required to bear the consignee's name and the destination station.

RAILWAY CLEARING HOUSE.
31st December, 1940

BRITISH RAILWAYS

R.E.C. poster announcement of merchandise-addressing alterations

Protecting the Inland Waterways of Ulster

Under an order made by the Ministry of Public Security in Ulster, announced on January 13, it is now an offence to leave a vessel unattended on any inland waters unless proper steps have been taken to immobilise it. In the case of steam and motor vessels an essential part of the propelling machinery must be removed or a locking device applied to the mechanism. Sailing ships and rowing boats are also to be made unusable if left. All inland canals, lakes, navigable rivers, and broads, are covered by the order. Tidal waters had already been provided for by Admiralty regulations.

Kassala Reoccupied by British

The reoccupation of Kassala by British Forces, announced in a *communiqué* from G.H.Q., Cairo, on January 29, is chiefly of interest because of the important point occupied by that town on the Sudan Railways, and also the main road from Atbara to Biscia, in Eritrea, whence there is a railway to Agordat, Asmara, and Massaua on the coast. From Port Sudan the line runs south to Haia, where one branch carries on to Kassala and the other bears south-westwards to Atbara and then to Khartoum and Sennar; Kassala is linked with Gedaref and Sennar by a line which is worked by the Sudan

Railways, but was built by two companies; the section from Haia to Kassala by the Kassala Railway Co. Ltd. and thence by the Gedaref Railway & Development Co. (Sudan) Ltd. These sections form a through route. It is understood that before the Italians occupied Kassala the administration of the Sudan Railways was able to remove not only all the locomotives stationed there, but also most of the workshop equipment.

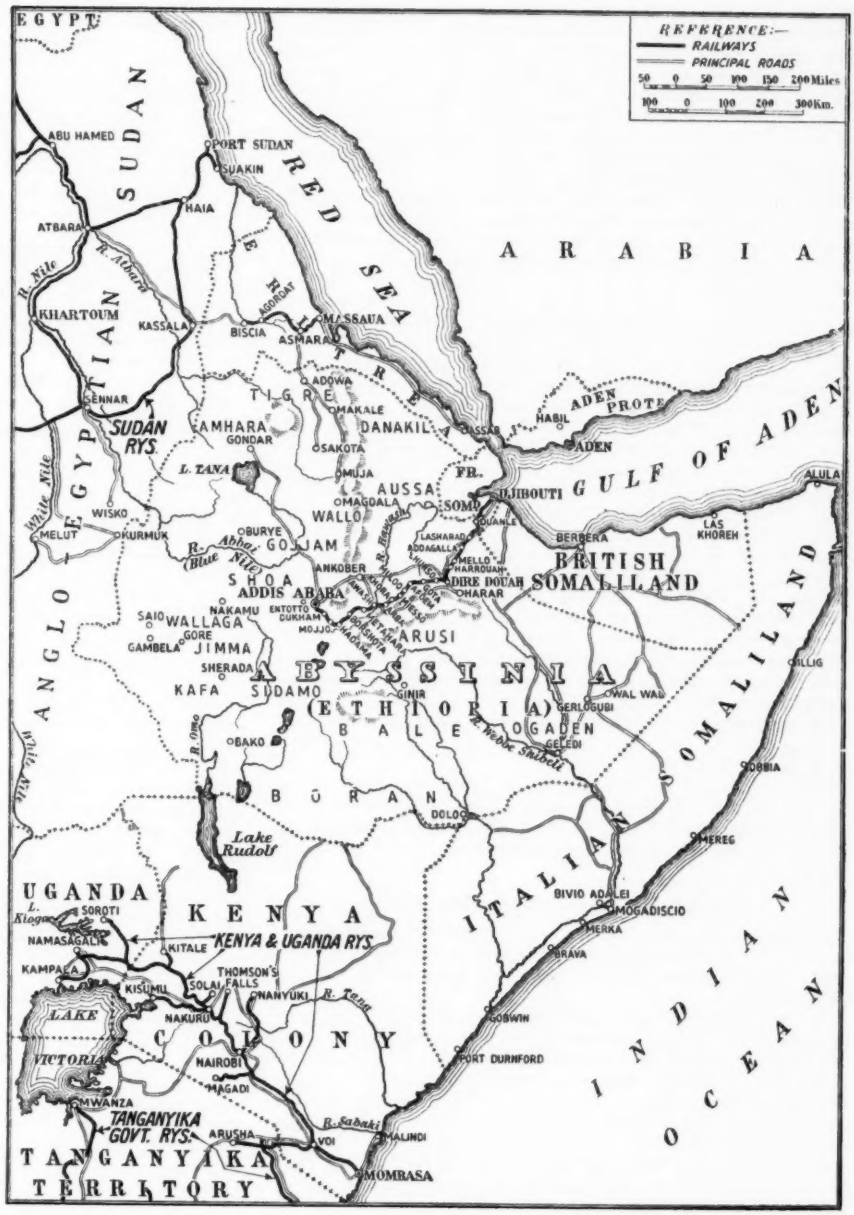
War Damage of the Norwegian Railways

The estimated cost of the damage sustained by the Norwegian State Railways during the war is Kr. 14,500,000. The bulk of this sum will be required to replace damaged bridges, track, and buildings, but one steam and two electric locomotives were entirely destroyed, as well as 32 units of rolling stock. The cost of their replacement is put at Kr. 2,500,000. Many other vehicles and a few locomotives are repairable and 200 of the former are being reconditioned with all speed by the Hamar Iron Foundry, as the railways are faced with a serious shortage of stock. It will be remembered that Krupps secured the monopoly for supplying new engines and stock to Norway.

Transport Control in Germany

In order to make the best possible use of all available means of transport in wartime, the German Minister of Transport issued a decree in September, 1940, establishing a central transport organisation, which is now in operation. The organisation is headed by a Central Transport Office (*Hauptverkehrsleitung*) at the Ministry in Berlin, under a committee of the chiefs of the transport sections of the Ministry, and under this central office operate three regional transport offices (*Gebietsverkehrsleitungen*), namely, an East Region at Berlin, West Region at Essen, and South Region at Munich, under regional commissions consisting of three or four members and a president, the members representing rail, road, inland shipping, and in the East and West regions, ocean shipping. Rhine, Weser, and Elbe waterways and canals come under the West region, the Danube basin under the South, and the remaining waterways under the East. Each regional office is sub-divided in divisions, a divisional office (*Bezirksverkehrsleitung*) being established at the *Direktion* headquarters of the Reichsbahn under the presidency of a Reichsbahn *Direktor*.

The duties and responsibilities of these organisations cover the closest possible co-operation of all means of transport, including consultation of the defence departments in the various regions and divisions. Their activities are limited to the distribution of traffic offered over the various routes; they exercise full powers in the direction of all consignments offered to specified undertakings and routes, but do not control management and operating of the transport undertakings, however. Special branch offices operate in the regional administrations for coal and ore transport.



The railways of East Africa

Through Services in Holland, Belgium, and Luxembourg

Since the introduction of the winter timetable on October 6, 1940, the German Reichsbahn has maintained a few through services into the occupied Low Countries, some along unfamiliar routes. Up to the end of 1940 no extension to these services had been given, and the existing services were occasionally interrupted, and very often seriously delayed according to reports received from travellers to neutral countries.

The through services in operation were: one dining car express between Berlin (Schlesischer station) and The Hague, in 11¼ hr., connecting at Osnabruck with a Hamburg—

Bremen—Cologne train ; one sleeping car express Berlin (Potsdamer station) to The Hague and back, *via* Magdeburg and Löhne, with a connection at the latter by a through portion from and to Dresden, the Berlin—The Hague journey taking 13 hr., and Dresden—The Hague 14½ hr. The return timings of these trains are ½ hour longer, including stops of 1¼ hr. or more at the German frontier station of Bentheim. No through carriages are provided for either Amsterdam or Rotterdam, nor from Hamburg or Bremen.

The routes *via* Emmerich and Cleves were not used, bridges on these lines in Dutch territory being out of order, but local trains were run on each side of the gaps, connecting at the German frontier with semi-fast trains to Cologne and the Ruhr stations.

According to a report of January 20, all Customs barriers between Germany and the Netherlands have been lifted.

Belgium has been served by two pairs of trains daily, using an unusual route from Aachen *via* Maastricht, Liége, Louvain, Brussels (Nord), and Mons, to Paris. The Berlin (Friedrichsstrasse)—Brussels journey took 15½ hr., and the Brussels—Paris 7 hr. All trains included through carriages Berlin—Cologne—Paris, dining cars on the daylight sections, and sleeping cars on the night sections. In Germany the Berlin portions of the day trains are routed *via* Hanover, Hamm, Essen, and Crefeld, to Aachen (West), where the Cologne portion was attached or detached. The night trains followed the normal route *via* Cologne.

Luxembourg Town had one night train from Berlin *via* Giessen and Koblenz, and one day train as far as Giessen both ways, with only second and third class carriages and no sleeping cars, but dining cars part of the way.

On one other route into occupied territory through trains were operated, namely, two trains each way between Saarbrücken and Paris (Est), *via* Metz, Pagny, Lerouville, and Chalons-sur-Marne, with a dining car on the day trains, and sleeping cars on the night trains, but no times were advertised in the timetable.

The Guillaume Luxembourg lines, formerly operated by the Alsace section of the French National Railways, were taken over by the Reichsbahn on September 1, 1940, and the other Luxembourg system, the Prince Henri, on December 7, 1940.

Balkan Railway Disorganisation

During the past week or so, severe weather conditions and the increasingly tense military situation in the Balkans have combined to cause further drastic restrictions in railway traffic.

In Bulgaria passenger traffic was greatly curtailed from January 22. Official reasons given were coal shortage and the need for repairs to locomotives and rolling stock.

In Jugoslavia 166 trains were suspended from January 15. The official reason given is shortage of coal, lubricating oil, and rolling stock. Unconfirmed reports state that considerable quantities of rolling stock have been sent to Germany; it is possible that the origin of this report may be the retention by Germany of rolling stock used for international traffic.

In Hungary an unexpected announcement issued on the morning of January 16 by the Hungarian State Railways said that from midnight of that day all passenger trains would be cancelled for a period of three days with the exception of international and workmen's trains and certain railcar services. The official reasons given were the severe weather conditions all over the country and the curtailment of connecting railway services in neighbouring territories. On January 18 a Belgrade message stated that advantage was being taken of this temporary suspension of traffic in Hungary to send back empty German troop trains from Roumania and to dispatch food to Transylvania which was experiencing a considerable shortage.

Probationer Clerks and Military Service in South Africa

Special emergency measures affecting the appointment of probationer clerks on the South African railways have been decided upon by the administration. An official statement says :—

"Steps have been taken by the South African Railways & Harbours administration to insure that the position of youths who would normally have entered the railway service as probationer clerks will not in any way be prejudiced by reason of the fact that they have joined the Forces.

"A candidate who has passed the competitive examination and is selected for appointment to a clerical position in the railway service, but who is unable to take up such appointment due to his being on active service, shall, on discharge, be eligible for appointment at the salary which would normally have been attained had his appointment been effected at the time of selection. He will have to apply for such appointment within six months of his discharge.

"In the case of youths who were eligible to undergo the last or will be eligible to undergo subsequent competitive clerical examinations, but were, or will be, unable to do so, due to their being on active service, the age limit normally applicable to candidates for this examination will be extended by the actual period spent on active service in order to permit of their undergoing the examination on their return. Should they thereupon be selected for appointment they will be appointed at salary scales commensurate with the time spent on active service."

Civil Aviation in 1940

During 1940, British civil aircraft flew five million miles and carried, besides passengers and freight, nearly 30 million air mail letters. Even in mid-winter, with severe weather added to the already considerable hazards of wartime flying, approximately 100,000 miles are being covered every week by the flying boats and landplanes of the British Overseas Airways Corporation. Throughout the year contacts with Europe were maintained regularly despite the German overrunning of the Continent. On the Lisbon service recently 400 passengers were carried in a month, as well as much mail and freight; on these flights it is no uncommon thing for the passengers to be of five different nationalities, and not long ago eight countries were represented in one aircraft—Great Britain, Poland, Norway, Belgium, France, Japan, Hungary, and Luxembourg. Government needs of passenger space are heavy and continuous. The regular landplane service to Lisbon began on June 4.

During the summer the transatlantic flights of the *Clare* and the *Clyde*, which began on August 3 at the height of the invasion crisis, were completed after ten crossings without incident or interruption. Passengers were carried across the Atlantic on British flying boats for the first time; they totalled 50. It is hoped to resume these flights during 1941.

Since Italy entered the war and France sought an armistice, aircraft belonging to the British Overseas Airways Corporation, or under charter to it, have served 34 countries. Of that number fourteen were neutral and therefore closed to military machines. A new link has been established by way of Lisbon to Bathurst on the West Coast of Africa which has involved a sea crossing of 1,800 miles, roughly equivalent to that of the North Atlantic. Beyond Bathurst there is another long hop, from Freetown to Lagos, more than 1,200 miles, before connection is made with the landplane services which traverse Africa. These landplane flights from the West Coast to Cairo in the east, a distance of 3,500 miles, are across the heart of the continent, and night stops are made at places like Kano and El Fasher where caravans have met for a thousand years.

In close co-operation with British Airways, Dutch landplanes from the fleet of K.L.M. are supplementing our flying boats to Lisbon, and in Africa, Sabena, the Belgian national air company, is flying between the West Coast and Egypt by way of the Belgian Congo.

German Commercial Air Lines

The winter timetable of the Lufthansa provides for no internal routes in Germany but only for various international services as follow :—

Berlin—Vienna—Budapest—Bucharest
Berlin—Prague—Vienna—Budapest—Belgrade—Sofia
Berlin—Munich—Venice—Rome (joint with Ala Littoria)
Berlin—Danzig—Königsberg—Bialystok—Minsk—Moscow
Berlin—Copenhagen—Oslo

If accommodation is available, however, passengers are conveyed between two points in Germany on these services. Air lines into German territory are maintained by foreign operating companies as follow :—

Stockholm—Berlin (Swedish)
Copenhagen—Berlin—Munich (Danish)
Zurich—Munich (Swiss)
Budapest—Vienna—Breslau—Berlin (Hungarian

Proposed New South American Transcontinental Railway

The much-debated question of another South American Transcontinental Railway was once again brought into focus at the recent Pan-American Conference in Havana. This time discussion centred on the possibility of completing the railway between Santos in Brazil and Arica in Chile with the help of the railways already built between Santos and Porto Esperança in Brazil and those completed from Arica to Villa Villa in Chile and Bolivia. With the completion of the railway at present under construction from Porto Esperança to Santa Cruz—already referred to on numerous occasions in THE RAILWAY GAZETTE, notably in the issues of May 27 and September, 1938, and January 13 and May 19, 1939—it only remains to join up Santa Cruz with Villa Villa to allow of through rail communication from ocean to ocean.

At the present time the only routes for travel or transport of merchandise, save by air, between Brazil, Chile, Peru, and Ecuador are through the Panama Canal or by the tortuous Straits of Magellan. A transcontinental railway such as that projected is, therefore, almost a necessity.

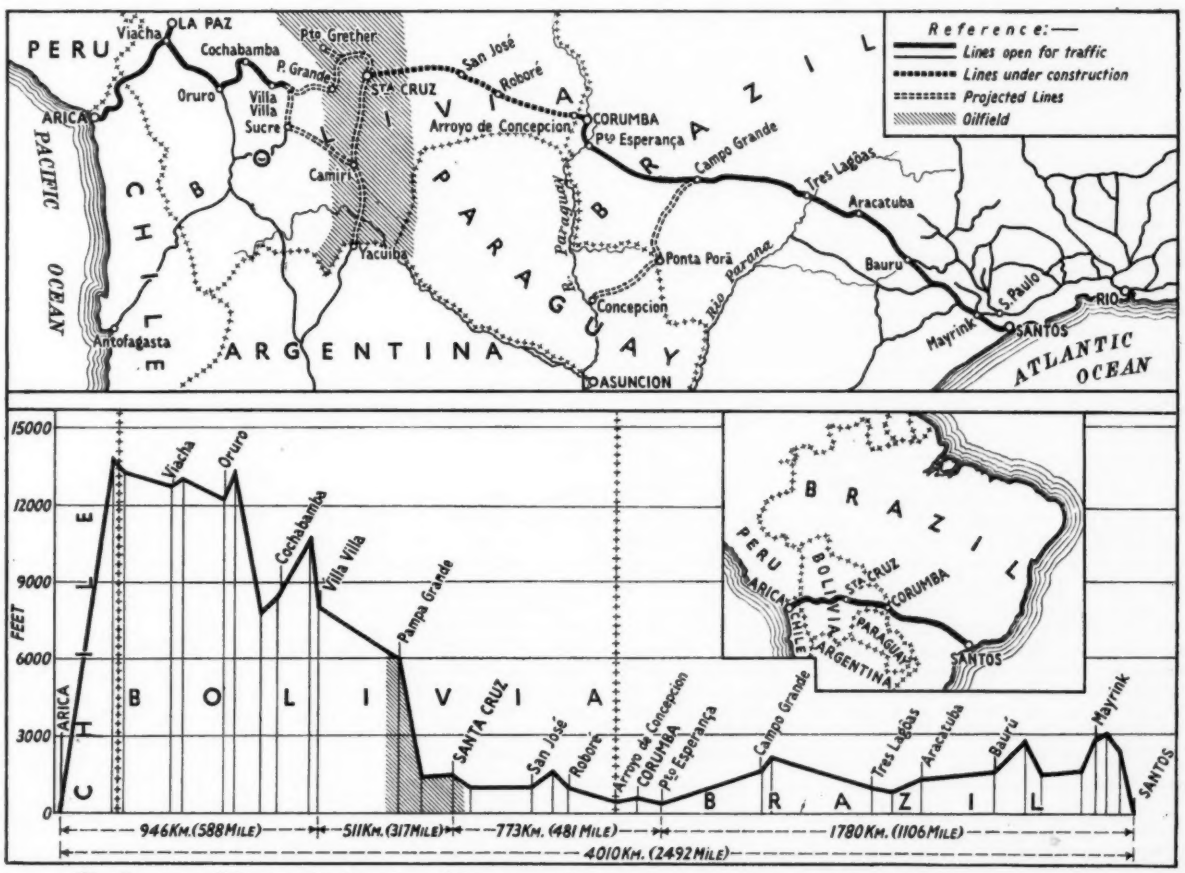
By its position as a country without a coast line, Bolivia is obviously one of the parties most interested in the realisation of this scheme. It was, in fact, the delegation from that country which brought the matter up for debate at Havana and advocated it on grounds of military convenience. The idea dates back to 1904 when the Bolivian Government first entered into negotiations with the Chilean Government in regard to the building of the railway from Arica to La Paz indicated in the map below. Once this was accomplished, the Bolivians extended the line from La Paz to Cochabamba with the intention of eventually proceeding to the valley of the River Paraguay. In 1937, however, the Bolivians came to an arrangement with the Brazilian Government regarding the extension of its North-Western Railway from Porto Esperança to Santa Cruz de La Sierra.

This extension, comprising 773 km. of line, is already well in hand, and the section from Porto Esperança to Arroyo de Concepcion on the frontier *via* Corumbá has already been completed. Rails are also laid up to Porto Suarez in the direction of El Carmen, 100 km. from Corumbá. The total length of line open for traffic at present from coast to coast is 2,726 km., and considering that 773 km. are under construction or just completed, only 511 km. from Santa Cruz to Villa Villa remain to be completed. Of the coast-to-coast total of 4,010 km., 1,919 km. will be through Brazilian territory, 1,881 km. through Bolivia, and 210 km. through Chile. [An editorial on this important scheme will be found on page 85.]

The Arroyo de Concepcion—Santa Cruz Construction

Excluding the more populous centres of Porto Suarez, Roboré, and S. José de Chiquitos, the area traversed by the new line now being built from Arroyo de Concepcion to Santa Cruz is only sparsely inhabited, but 31 stations are to be built for expected future requirements. It is hoped to complete the line within the next four years.

As significant of the influence which this railway will have on the development of the petroleum industry in Bolivia, it is interesting to note that the petrol necessary for the present requirements of the Construction Commission is already being purchased in Santa Cruz at a cost of $650 (reis) a litre, whereas the cost in Corumbá of petrol transported from eastern commercial centres is 2$200 a litre.



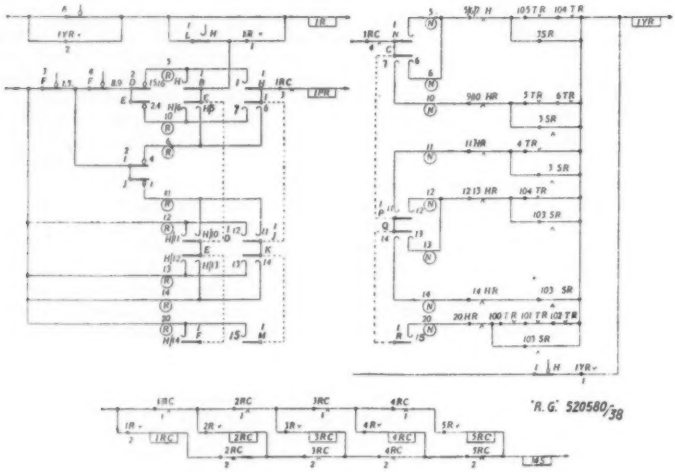
Sketch map and longitudinal section of the proposed South American Transcontinental Railway from Santos (Brazil) to Arica (Chile)

ABSTRACTS OF RECENT PATENTS*

No. 520,580. Signal and/or Point Control

Standard Telephones and Cables Limited, John Balmain Griffiths, Andrew Brown and Thomas Alfred Marshall, of Connaught House, 63, Aldwych, London, W.C.2. (*Application date: October 7, 1938.*) (*Patent of Addition to No. 496,495.*)

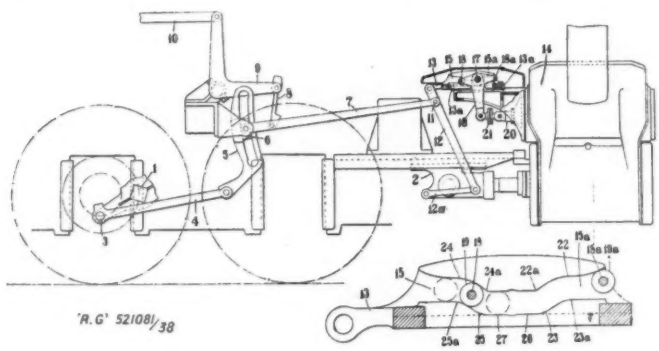
This is an improvement on Patent No. 496,495 in that a complete lock-out is provided between the multi-position control switches. The master cam *A* controls the sequence switch cut in all route setting positions, and cam *L* is shown making contact only in the "home" position. Cam *F* of sequence switch 3 makes contact except when in positions "1" and "3," and copper cams *D* and *E* in sequence switch 2 are connected together, cutting their circuits at 15, 16 and 2, 4. Similarly the pairs of cams on sequence switch 1 (*B*, *C*, *D*, *E* and *F*) are connected on the sequence switch rotor, the wipers contacting cam *C* making contact from "home" to "6" and from "home" to "5." In the specification No. 496,495 a group of *RC* contacts was required in series with each clutch magnet to prevent simultaneous rotation of two switches carrying conflicting routes. Supposing the signalman attempts to set up Route 5 by reversing switch 5. Providing no conflicting routes are already set a circuit will be completed for relay 1*R*—over cams *F*, *D* and *B* of switches 3, 4, 2 and 1, switch 5, cam *L* of switch 1 and relay 1*R*, which latter energises clutch magnet 1*RC* for switch 1. If a clutch magnet—3*RC*—in a lock-out circuit is energised, contacts 3*RC* remove positive feed from clutch magnets to the right and negative feed from those to the left so that only one clutch magnet can be operated at a time. On operation of magnet 1*RC*, the sequence switch revolves out of the "home" position, so that cam 1*B* breaks the circuit for relay 1*R*, which latter remains energised over cam *A* until position "1" is reached (route 5), whereupon relay 1*R* and magnet 1*RC* are de-energised. Relay 1*PR* is then operated over contacts 1*RC*3 and cam 1*H* in position "1," whereupon switch 1 in position "1" and relay 1*PR* operated, set the necessary points and signal. Now the relay 1*R* circuit is broken by cam 1*L* and the sequence switch can only be driven "home" by contacts 1*YR*2 when it is safe to restore route 5 to normal. The conventions used are those of British Standard Specification No. 337.—(*Accepted April 29, 1940.*)



No. 521,081. Valve Gears

Caprotti Valve Gears Limited, of 66, Victoria Street, London, S.W.1 (*a communication from abroad by John J. Kupka, of P.O. Box 172, New Brunswick, New Jersey, United States of America*). (*Application date: November 18, 1938.*)

The valve gear of a steam locomotive is supplemented by an auxiliary device adapted to impart increased acceleration and deceleration at or between valve events. For instance, with Walschaert's valve motion, as shown, the crank pin 1 of the main driving wheel is connected with the cross-head 2 in the usual way by crank pin 3, eccentric rod 4, oscillating link 5, pin 6, driving rod 7 (connected to the reversing rod 10 by link 8 and bell-crank 9), pin 11, lever 12 and link 12*a*. Now, according to the invention, the lever 12 is attached to a reciprocating member 13 sliding in guides 13*a* attached to the cylinder 14 and having slots 15, 15*a* shaped to give requisite motion to a rocking member 16, this rocking member having fulcrum 17 and pins 18, 18*a* carrying rollers 19, 19*a* which ride in the slots 15, 15*a*. The foot of rocking member 16 is connected to the valve spindle 20 by means of a link 21. The movement, acceleration and deceleration are derived from the shapes of faces 22, 25 and 25*a*, 22*a* respectively, for the period when the valve is drawn towards the cross-head of the cylinder.



Similarly, faces 24, 23, and 24*a*, 23*a* act when the valve moves away from the cross-head. Preformed faces 26, 27 may be arranged to hold the valve fully open.—(*Accepted May 10, 1940.*)

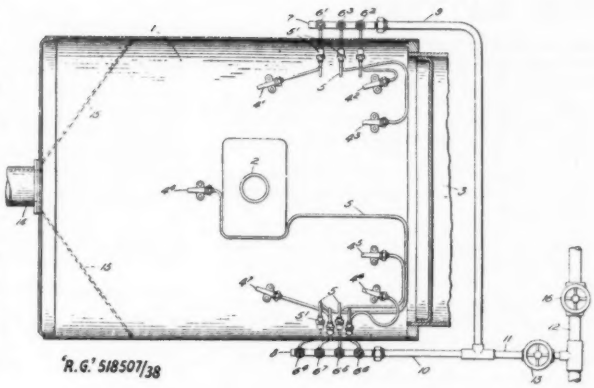
No. 518,507. Ash Ejecting

Thomas Wright Royle, Chief Operating Manager, London Midland & Scottish Railway Company, Euston Station, London, N.W.1, and Percy McCallum, of Coundon, Eastbury Road, Oxhey, Herts. (*Application date: August 27, 1938.*)

A blast pipe 2, for creating a draught through the tubes of boiler 3, is located in the smoke-box 1, and secured to the smoke-box are nozzle fittings 4^1 to 4^7 connected by pipes 5 and unions 5^1 to

* These abridgments of recently published specifications are specially compiled for THE RAILWAY GAZETTE by permission of the Controller of His Majesty's Stationery Office. Group abridgments can be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, either sheet by sheet as issued, on payment of a subscription of 5s. a group volume, or in bound volumes, price 2s. each, and the full specifications can be obtained from the same address price 1s. each.

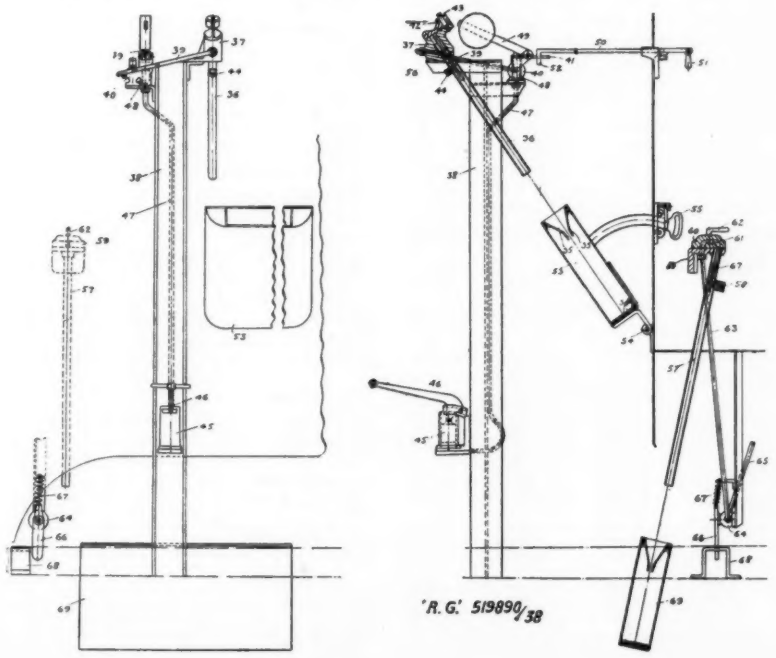
stop valves 6^1 to 6^3 of manifold 7 and stop valves 6^4 to 6^7 of manifold 8. Pipes 9 and 10 connect the manifolds to pipe 11 branched from an injector delivery pipe 12 through stop valve 13. An outlet 14 for ejection of ashes is provided at the front of the smoke-box and deflector plates 15 may also be provided for assisting movement of ashes to the outlet. During normal working of the locomotive cock 13 is closed and cock 16 is open, the injector feeding to the clack box in the usual manner. To clear the smoke-box of ash the cock 13 is opened and cock 16 is closed.—(*Accepted February* 28, 1940.)



No. 519,890. Token Exchanging

The Railway Signal Co. Ltd., of 40, *Broadway, London, S.W.*1, *Walter Sydney Roberts, of Newby, Ruff Lane, Ormskirk, Lancashire, and Joseph Hallam Burton, of Pine House, Signal Works Road, Fazakerley, Liverpool.* (*Application date: October* 5, 1938.)

According to this invention the token staffs 56 are positively propelled from a fixed point to a train (or *vice versa*) by pneumatic means such as compressed air from a compressor 45. The projection apparatus consists of a barrel 36 and a breech 37 and cap 42 mounted on a standard 38, the barrel communicating, by means of a passage in the breech, with a pipe 39 which leads to a rotary plug cock 40. The plug of the cock has an operating arm 41, which is engaged by the end 52 of trip arm 50 mounted on the train, when this arm is moved outward by handle 51, this opening the cock 40 to supply compressed air to the barrel 36, thereby propelling the train staff 56 downwards past retaining catch 44 into casing 53 on the train. This casing is pivoted at 54 and moved by handle 55, and is provided with flaps 35 and a cushion 34. Air is compressed in pipe 47 by means of a handle 46 and supplied to cock 40 through control 48. For the train the apparatus is similar to the above, having a catch 58 in barrel 57 mounted in a breech 59 having a cap valve member 60 with internal passages 61 and operating 62, this valve controlling communication between tube 37 and pipe 63 through rotary plug cock 64, with pipe 65 leading to the braking system. The operating arm 66, normally restrained by spring 67, is arranged to engage a trip device 68 mounted on the track.—(*Accepted April* 9, 1940.)



COMPLETE SPECIFICATIONS ACCEPTED

518,768. General Railway Signal Company. Control apparatus for railway installations.

518,769. General Railway Signal Company. Traffic-controlling systems for railways.

518,773. Hopkinsons Limited, and Brown, R. L. Boiler feed-water regulators.

518,790. McKean, J. G. Boilers provided with automatic solid fuel stokers.

518,850. Standard Telephones & Cables Limited. Method of and means for giving indication on board a vehicle moving along a guiding-path, navigational data, and utilising a single radio transmitter.

518,984. Soc. d'Exploitation des Procedes Dabeg. Valve gear for steam engines.

519,074. Ferrari, E. Water-tube steam boilers.

519,252. Overton, W. Buffers and edgings for sliding-doors.

519,374. Schneider, J. F. Welded rail bonds.

519,450. Westinghouse Brake & Signal Co. Ltd. Braking-apparatus for railway and like vehicles.

519,525. Waring, A. H., Imperial Chemical Industries Limited and International Combustion Limited. Water-tube steam boilers.

519,568. Hurst, W. F. F. Martin-, British Thermostat Co. Ltd., Delaney, C. T., and Gallay Limited. Valves for steam or pressure vessels.

519,649. Mooney, E., and Mooney, A. Lubricators for railway-vehicle axles.

519,713. George, W. L., and Gallay Limited. Boiler for aircraft, ships, locomotives, or motor road vehicles.

519,772. Boot, J., and General Railway Signal Co. Ltd. Automatic train-control systems.

519,844. Kellett, A. F., and Hayes, G. Route or destination indicators.

519,890. Railway Signal Co. Ltd., Roberts, W. S., and Burton, J. H. Token-exchanging apparatus for railways.

519,891. Schweizerische Lokomotiv und Maschinenfabrik. Multi-stage control devices for power-driven vehicles, including a plurality of steam engines.

520,026. Dudley, W. H. Common crossings and the like for railways and the like.

520,185. Boot, J., and General Railway Signal Co. Ltd. Switch-machines for railway points.

520,261. Olson, J. H. Railway dumping-cars.

520,284. Dell, R., Every, W. S., and London Passenger Transport Board. Electromagnetic relays for use on railway signalling and the like.

520,454. Tustain, E. H. Levelling-gauges for use in connection with rail and like tracks.

520,470. Cook, F., Witts, H. E., and London Passenger Transport Board. Current-collectors for electric vehicles.

520,500. Automatic Telephone & Electric Co. Ltd., Roseby, P. N., and Mackenzie, J. F. Electrical signalling systems.

520,541. O'Neill, J., Hussey, G. S., and London Midland & Scottish Railway Company. Label holders, particularly applicable to railway and like wagons.

520,580. Standard Telephones & Cables Limited, Griffiths, J. B., Brown, A., and Marshall, T. A. Railway signal and/or points-control equipment.

520,715. Soc. Anon. Locomotive a Vapore Franco. Articulated joints for pipes.

XUM

STAFF AND LABOUR MATTERS

Cost of Living

The result of the inquiry undertaken by the Ministry of Labour in 1937-38 to obtain a representative collection of budgets giving particulars of the weekly expenditure of working-class households has now been published. The main purpose for which these particulars were required was to provide material for a revision of the basis of the official statistics generally known as the "cost-of-living index figures." Those statistics, which are widely used in the regulation of wages, were instituted in the year 1914 with the object of providing an indication of the average percentage changes, month by month, in the cost of maintaining the standard of living then prevailing among working-class families, and they have since been regularly compiled on the same basis and published by the Ministry of Labour. In view of the changes which had taken place in modes of living and habits of expenditure since 1914, the Minister of Labour announced, in April, 1936, that he proposed to undertake an enquiry into working-class household expenditure in order to ascertain what changes should be made in the items included in the computation of the cost-of-living index figures and in the numerical "weights," representing the relative importance of the separate items, used in the calculations.

The Ministry aimed at collecting budgets from 10,000 households, but the number of budgets on which the information is based is 8,905, distributed over the country as follows :—

	Number	Percentage of total
London and South Eastern ...	2,295	25·8
South Western	776	8·7
Midlands	1,276	14·3
North Eastern	1,035	11·6
North Western	1,281	14·4
Northern	572	6·4
Total, England	7,235	81·2
Wales	434	4·9
Scotland	980	11·0
Northern Ireland	256	2·9
Total, United Kingdom	8,905	100·0

The budget forms on which the information was supplied asked for particulars of :—

(*a*) The composition of the household—the sex and age (if under 18) of each person, the occupation and industry of each wage and salary earner, and the number of days worked in the previous week ;

(*b*) Housing—the rent (or purchase payments) and rates, number of rooms in the house or dwelling, number of rooms let (if any) and rent received ;

(*c*) Expenditure on food—the quantity and cost of each item bought on each day of the week ;

(*d*) Expenditure on gas and electricity during the week (if a slot meter was used) or during the period covered by the last account (in other cases) ;

(*e*) Expenditure during the week on fuel, clothing, cleaning materials, furniture, and household utensils, travelling, entertainments, newspapers, books, insurances, trade union subscriptions, and various other items, a printed list of each of the main items being provided, with a space for "other expenditure" ;

(*f*) Garden, allotment, etc., produce—the quantities of eggs, vegetables, fruit, etc., raised at home and consumed in the household during the week.

The forms were completed in respect of one week in each of the seasons, spring, summer, autumn and winter, and the average number of persons in the industrial households who supplied budgets was approximately $3\frac{3}{4}$, of whom nearly $2\frac{1}{2}$ were aged 18 years or over and one was a child under 14 years. The average number of wage or salary-earners was $1\frac{3}{4}$, and the average number of days worked by these earners in the four weeks for which particulars were obtained was 5·0 per week. The general average expenditure per household for the four weeks was as follows :—

	s.	d.
Rent, purchase of dwelling, rates, etc. ...	10	10
Food	34	1
Clothing	9	4
Fuel and light	6	5
Other items	25	7
Total	86	3

In view of the wide variations in expenditure on clothing and footwear at different periods of the year, arrangements were made to obtain from a large and representative selection of households, records of their expenditure under this heading week by week for a period of twelve months, and the average expenditure for the twelve months was 8s. 2d., and if this figure is substituted for the 9s. 4d. shown in the above table, the total expenditure on all items becomes approximately 85s. 0d., of which food accounted for about 40 per cent., rent, etc., including rates, nearly 13 per cent., clothing between 9 and 10 per cent., fuel and lighting between 7 and 8 per cent., and other items 30 per cent. In the Ministry of Labour's present cost of living index the weights employed are—food 60 per cent., rent 16 per cent., clothing 12 per cent., fuel and light 8 per cent., and other items 4 per cent.

Irish Traffic Returns

IRELAND		Totals for 1st (full) Week			Totals to Date		
		1941	1940	Inc. or Dec.	1941	1940	Inc. or Dec.
		£	£	£	£	£	£
Belfast & C.D. (80 miles)	pass.	2,634	2,206	+ 428	2,634	2,206	+ 428
	goods	753	445	+ 308	753	445	+ 308
	total	3,387	2,651	+ 736	3,387	2,651	+ 736
Great Northern (543 miles)	pass.	12,150	9,250	+ 2,900	12,150	9,250	+ 2,900
	goods	13,500	11,050	+ 2,450	13,500	11,050	+ 2,450
	total	25,650	20,300	+ 5,350	25,650	20,300	+ 5,350
Great Southern (2,076 miles)	pass.	32,474	29,614	+ 2,860	32,474	29,614	+ 2,860
	goods	53,500	43,566	+ 9,934	53,500	43,566	+ 9,934
	total	85,974	73,180	+ 12,794	85,974	73,180	+ 12,794
L.M.S.R. (N.C.C.)* (247 miles)	pass.	6,200	4,110	+ 2,090	6,200	4,110	+ 2,090
	goods	5,040	2,950	+ 2,090	5,040	2,950	+ 2,090
	total	11,240	7,060	+ 4,180	11,240	7,060	+ 4,180

* Traffic return numbered 1A

British and Irish Railway Stocks and Shares

Stocks	Highest 1940	Lowest 1940	Prices Jan. 21, 1941	Prices Rise/Fall
G.W.R.				
Cons. Ord.	52	22½	36	—
5% Con. Pref. ...	103½	58	88½	+1½
5% Red. Pref. (1950)	105½	88	97½	—
4% Deb.	107½	90½	105¾	+¼
4½% Deb.	108½	96½	108	—
4½% Deb.	114¾	96	113½	—
5% Deb.	124	106	121½	—
2½% Deb.	66½	57	61	—
5% Rt. Charge ...	117¾	97	117	—
5% Cons. Guar. ...	117	90½	115¼	+2¼
L.M.S.R.				
Ord.	24⅞	9	14½	−½
4% Pref. (1923) ...	60½	21⅜	40	—
4% Pref.	70¾	35	54	−½
5% Red. Pref. (1955)	94½	60	76½	—
4% Deb.	101¾	81	100¾	−¼
5% Red. Deb. (1952)	109½	102	108	—
4% Guar.	93¾	65	89	+1
L.N.E.R.				
5% Pref. Ord. ...	8⅜	1½	2⅞	−⅛
Def. Ord.	4⅜	1¼	1⅜	—
4% First Pref. ...	60	20	37½	—
4% Second Pref. ...	22⅞	6½	11⅜	−⅜
5% Red. Pref. (1955)	80	34½	53½	—
4% First Guar. ...	86½	56	79	+2
4% Second Guar. ...	77½	37	62	—
3% Deb.	73½	54½	70¾	+¼
4% Deb.	97⅜	74	93	—
5% Red. Deb. (1947)	107	96¾	103	—
4½% Sinking Fund Red. Deb.	104	98	100¼	—
SOUTHERN				
Pref. Ord.	79	34	51½	—
Def. Ord.	22½	7	11½	—
5% Pref.	104½	58¾	87	+1½
5% Red. Pref (1964)	105	85	89½	—
5% Guar. Pref. ...	116¾	90	115	+1
5% Red. Guar. Pref. (1957)	114⅞	94	109½	—
4% Deb.	106¾	84½	106	+½
5% Deb.	122½	100	119½	—
4% Red. Deb. (1962–67)	106	96½	100½	—
4% Red. Deb. (1970–80)	106⅜	93	101½	—
FORTH BRIDGE				
4% Deb.	95½	87	86½	—
4% Guar.	93½	81½	84½	—
L.P.T.B.				
4½% "A"	116	103	111½	+¾
5% "A"	121½	107	116½	+½
4½% "T.F.A." ...	105½	101	102½	—
5% "B"	116	102	106	+1
"C"	65½	24	34	+1
MERSEY				
Ord.	26	18½	22½	—
4% Perp. Deb. ...	92½	86¾	91½	—
3% Perp. Deb. ...	68	63	60½	—
3% Perp. Pref. ...	57	50½	54½	—
IRELAND				
BELFAST & C.D.				
Ord.	4	3	4	—
G. NORTHERN				
Ord.	4½	1½	4½	+1½
G. SOUTHERN				
Ord.	12½	4	6½	+½
Pref.	15½	6	10½	+1½
Guar.	36	15	25	+5
Deb.	55½	40	54	+4

OFFICIAL NOTICES

London and North Eastern Railway

NOTICE IS HEREBY GIVEN that the Directors have fixed January 31st at the close of business as the date for striking the balances of the Company's Guaramteed, Preference and Ordinary Stocks. Final Dividends declared for the year ended 31st December, 1940, will be payable only to the Stockholders whose names are registered in the books of the Company on the date so fixed.

Deeds of Transfer should, therefore, be lodged with the Registrar of the Company at Hamilton Buildings, Liverpool Street Station, London, E.C.2, before 5.0 p.m. on 31st January.

By Order,
P. J. DOWSETT,
Secretary.

Marylebone Station,
London, N.W.1.
21st January, 1941.

Crown Agents for the Colonies

COLONIAL GOVERNMENT APPOINTMENTS.

APPLICATIONS from qualified candidates are invited for the following post :—

MAINTENANCE ENGINEER required by the Government of British Guiana for the Transport and Harbours Department for one tour of three years. Salary, £600 a year. Free passages and, if married, for wife and children not exceeding four persons. Leave on full salary. Candidates must be fully qualified Civil Engineers and have had good training in Track Maintenance, embracing yards layout and the laying down of points and crossings.

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience and mentioning this paper to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M/9393.

Universal Directory of Railway Officials and Railway Year Book

46th Annual Edition, 1940-41

This unique publication gives the names of all the principal railway officers throughout the world together with essential particulars of the systems with which they are connected. Much general and statistical information about railways is also concisely presented.

Price 20/- net.

THE DIRECTORY PUBLISHING CO., LTD.

33, Tothill Street, Westminster, S.W.1

Railway and Other Reports

National Omnibus & Transport Co. Ltd.—This company, a subsidiary of Thomas Tilling Limited, reports a profit of £116,635 (against £109,508) for the year 1940 after deducting £65,000 (£53,000) for taxation. Ordinary dividend is again 7 per cent., tax free; after £10,000 (£5,000) to general reserve, carry forward is £31,958 (£30,323).

Highland Transport Co. Ltd.—The report to September 30, 1940, of this company, in which the L.M.S.R. holds a 50 per cent. interest, shows gross trading profit of £14,076 (against £10,342). After depreciation, directors' fees, E.P.D., and income tax, there is a credit balance of £4,502 (£3,596). The directors recommend a dividend of 1s. 6d. a share (against 1s. 3d.), less tax, absorbing £1,509, that £1,000 be written off goodwill, and that £1,000 be placed to general reserve, leaving £992 to be carried forward (against £999).

Lincolnshire Road Car Co. Ltd.—Revenue to September 30, 1940, was £326,973 (against £299,126); operating expenses were £145,056 (£155,683), Road Acts duties and fuel tax. £37,117 (£50,280), administration and general expenses £16,341 (£14,810), directors' fees £1,700 (same), interest £72 (£992), taxation £50,000 (£1,243), depreciation £29,314 (£41,000) leaving a net balance of £47,369 (£33,416). General reserve receives £30,000 (£10,000), dividend is again 10 per cent. and £11,753 (£14,385) is carried forward. A large number of vehicles has been hired to the military authorities and 25 Leyland vehicles have been acquired by the War Department during the year.

Glyn, Mills & Co.—The capital of this old-established private banking house (incorporating Child & Co. and Holt & Co.) was acquired in the summer of 1939 by the Royal Bank of Scotland. Soundness of the financial position is indicated by the 113th statement of assets and liabilities as at December 31, 1940. Total assets are shown at £52,011,147, as against £44,668,546 at the end of 1939. In the present assets are included: £6,445,010 in coin, bank notes, and balance at Bank of England; £2,203,050 balances with and cheques in course of collection on, other banks in the United Kingdom; £8,778,200 money at call and short notice; bills discounted £927,467; Treasury deposit receipts £3,500,000; and investments £15,397,476, including £14,262,533 in British Government securities. These items together represent 80·99 per cent. of the deposits of £45,992,702. Advances to customers amount to £9,911,499, against £11,182,466 at December 31, 1939. The issued capital and the reserve fund remain at £1,060,000 and £850,000 respectively.

Notes and News

Vichy Government Transport Programme.—A Reuters message, dated January 19, from Vichy states that, in the Vichy Government's programme for large public works, totalling fr. 40,000,000,000, a sum of fr. 14,000,000,000 is allocated to railways, and a further sum of fr. 8,000,000,000 to roads, waterways, and ports.

Road Accidents.—The Ministry of Transport return of persons reported to have died in Great Britain during December, 1940, as a result of road accidents shows a total of 1,313 compared with 1,156 in December, 1939. Of these 873, compared with 897, occurred during hours of darkness, and 440 against 259 at other times. Adult pedestrians killed number 726 against 749 and motor cyclists 143 against 83. Adult pedal cyclists were 149 against 116.

Accidents on the Continent.—It was reported from Vichy last Monday that heavy falls of snow in Northern Spain were responsible for an accident to a train on the Norte near Reinosa, 55 miles south of Santander on the line to Venta de Banos, whereby five persons were killed. Vichy also reports the derailment on January 16 of a Berlin-Paris express in which there were several casualties. The place was not specified. The official German news agency on January 19 stated that three persons were killed in a collision between a goods and a passenger train near Vicenza in Italy. On January 20 a railcar and a shunting engine were in collision at Storaa in Central Sweden with the result that three persons were killed.

Contracts and Tenders

New equipment ordered by the Union Pacific Railroad for delivery in 1941 has a total value of $15,712,500. The orders include 15 high-speed 4-8-8-4 locomotives and tenders from the American Locomotive Company, 1,000 50-ton steel ballast wagons, 300 50-ton steel flat wagons, and 50 70-ton steel gondola wagons.

The South Indian Railway Company has placed the following contracts to the inspection of Messrs. Robert White & Partners :—

Linley & Co.: 30 Copper tube and backplates.
North British Locomotive Co. Ltd.: Spare parts of locomotives (piston rods and cylinders).
British Insulated Cables Limited: 1,008 track bonds.

The Madras & Southern Mahratta Railway has placed the following contracts to the inspection of Messrs. Rendel, Palmer & Tritton :—

John Baker & Bessemer Limited: 72 steel axles for coaches and wagons.
Steel, Peech & Tozer: 500 steel tyres for coaches and wagons.

The South African Railways & Harbours Administration is calling for tenders for the supply of vacuum brake gear, including couplings and single- and double-branch ball valve. The latest date for the receipt of tenders is February 11, and those desirous of offering equipment of United Kingdom manufacture should apply to the Department of Overseas Trade, Millbank, London, S.W.1, quoting the reference T.Y. 23636/40.

Owing to enemy action, the Southampton office of Callender's Cable & Construction Co. Ltd. is closed and the postal address of the new local office is Upper Brook Street, Winchester, to which all communications should be sent.

Forthcoming Meetings

Jan. 30 (*Thurs.*).—**Midland Bank Limited** (Ordinary general), Head Office, Poultry, E.C., at 12.30 p.m.

XUM

Railway Stock Market

In the absence of sustained improvement of business on the Stock Exchange, an easier tendency developed in most securities, and following the recent upward trend in values, there has been a certain amount of profit-taking. Contrary to the general experience, British Funds and other high-class stocks remained firm, partly owing to re-investment of proceeds from the requisitioning of American dollar securities. Among home railway stocks, less attention was given to the junior issues, and best prices recorded in the past few days were not maintained, although at the time of writing there is little change on balance. On the other hand, demand for various of the prior charges tended to improve this week, and guaranteed stocks were bought because of the generous yields at current prices. The market has not revised estimates of the dividends to be announced next month, but until it is known to what extent the financial agreement with the Government is to be modified, it is difficult to assess prospects. There is general confidence that the guaranteed minimum revenues will be maintained, but uncertainties as to rising costs, higher wages claims and compensation for air-raid damage must be expected to have an influence on sentiment. In the circumstances it does not appear likely that home railway stocks will move strongly against the general trend on the Stock Exchange, although so far as can be judged, they are undervalued in comparison with many other groups of securities.

Despite a moderate reaction, Great Western ordinary stock at **36** was unchanged on balance. Moreover, the preference stock improved fractionally to **88½**, and the guaranteed stock was **115½**, compared with **114** a week ago. Great Western 4 per cent. debentures were, however, unchanged at **106**. L.M.S.R. ordinary was less active, but on balance was only slightly lower at **14⅛**, compared with **14⅞** a week ago. On the other hand, L.M.S.R. senior preference at **54** was well maintained, as was the **1923** preference at **40**; in common with most other home railway stocks, best prices made in the past few days have not been held. L.M.S.R. 4 per cent. debentures were **101**, compared with **101⅛** a week ago, but the guaranteed stock improved slightly from **88⅛** to **89**. As to L.N.E.R. the debentures continued to come in for some attention because of the good yields; the 3 per cents held last week's rally to **70½**, and the 4 per cent. stock improved a point to **94**. There was also further buying of L.N.E.R. guaranteed issues; on balance the firsts were a point better at **79**, whereas the seconds moved up further from **62½** to **65½**. L.N.E.R. first preference at **37½** was fractionally better on balance, although the second preference eased from 12 to **11¾**. Of Southern issues, the preferred at **51½** was maintained on balance, and the deferred was virtually unchanged at **11½**. Southern preference was **87**, compared with **86** a week ago, and the guaranteed stock was **115½**, the same as the equivalent stock of the Great Western. Southern 4 per cent. debentures were again **106**. Compared with a week ago, London Transport "C" improved from **32⅛** to **34**, and the "A" and "B" stocks continued to be very firmly held. Although inactive, various Argentine railway debenture stocks again moved slightly better; B.A. Gt. Southern 4 per cents were **44½** and B.A. Western 4 per cents **34**. Elsewhere, however, Leopoldina debentures were lower. Various Indian railway stocks were marked at higher prices. Canadian Pacific Railway issues were active; the preference stock of this company transferred around **50**.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1940-41	Week Ending	Traffic for Week: Total this year	Traffic for Week: Inc. or Dec. compared with 1932	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1940	Prices: Lowest 1940	Prices: Jan. 21, 1941	Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	12.1.41	15,820	— 3,090	2	30,160	34,950	— 4,790	Ord. Stk.	11½	3½	4⅜	Nil
	Argentine North Eastern	753	11.1.41	ps. 148,900	+ ps.19,500	28	ps. 4,400,600	ps. 4,525,500	— ps.124,900	,,	3½	1	2	Nil
	Bolivar	174	Dec. 1940	2,700	— 1,301	52	45,200	51,531	— 6,331	6 p.c. Deb.	6½	5	6½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	8	5	6*	Nil
	Buenos Ayres & Pacific	2,801	11.1.41	ps.1,584,000	+ps.244,000	28	ps.33,436,000	ps. 34,713,000	—ps.1,277,000	Ord. Stk.	4½	1	2	Nil
	Buenos Aires Central	190	16.11.40	$77,400	— $12,600	20	$1,853,200	$2,210,300	— $357,100	—	—	—	—	—
	Buenos Ayres Great Southern	5,082	11.1.41	ps.2,289,000	—ps.615,000	28	ps.55,287,000	ps. 59,182,000	— ps.3,895,000	Ord. Stk.	10⅜	3	5	Nil
	Buenos Ayres Western	1,930	11.1.41	ps. 774,000	—ps.138,000	28	ps.19,172,000	ps. 20,848,000	— ps.1,676,000	,,	8¾	2	3¾	Nil
	Central Argentine	3,700	11.1.41	ps.1,477,050	— ps.22,900	28	ps.39,159,000	ps. 50,998,300	—ps11,839,300	,,	8¼	2	3	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4	½	1½	Nil
	Cent. Uruguay of M. Video	972	11.1.41	21,767	— 5,164	28	575,741	545,750	+ 29.991	Ord. Stk.	3½	½	1¼	Nil
	Costa Rica	188	May 1940	17,282	— 7,020	48	193,339	245,516	— 52,177	Stk.	23⅛	14	16½	12⅛
	Dorada	70	Nov. 1940	11,800	— 1,900	48	134,200	150,400	— 16,200	1 Mt. Db.	99	97½	98	6 1/16
	Entre Rios	810	11.1.41	ps. 206,200	— ps. 25,500	28	ps. 6,142,900	ps. 7,025,100	—ps. 882,200	Ord. Stk.	4	½	1½	Nil
	Great Western of Brazil	1,016	11.1.41	12,200	— 1,400	2	17,800	23,600	— 5,800	Ord. Sh.	4/-	1/-	2/16	Nil
	International of Cl. Amer.	794	Sept. 1940	$325,789	— $37,196	39	$4,405,419	$4,486,381	+ $80,962	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	9d.	9d.	⅛	Nil
	La Guaira & Caracas	22¾	Dec. 1940	4.730	— 2,455	52	77,230	74,961	+ 2,269	—	6	4	—	—
	Leopoldina	1,918	11.1.41	23,213	+ 1,627	2	34,351	34,693	— 342	Ord. Stk.	2 7/16	¼	¼	Nil
	Mexican	483	7.10.40	ps. 270,900	— ps. 300	14	ps. 3,816,500	ps. 3,954,000	—ps. 137,500	,,	2/11¼	1/16	⅛	Nil
	Midland of Uruguay	319	Oct. 1940	12,058	+ 3,732	17	45,052	34,464	+ 10.588	—	—	—	—	—
	Nitrate	386	15.1.41	4,547	— 5,378	2	4,547	9,925	— 5,378	Ord. Sh.	2⅜	1½	1⅞	7 11/16
	Paraguay Central	274	11.1.41	$2,102,000	— $1,074,000	28	$92,736,000	$91,308,000	+ $1,428,000	Pr. Li. Stk.	41	36	36	16 1/16
	Peruvian Corporation	1,059	Dec. 1940	64.856	— 2,585	26	393,325	383.935	+ 9,390	Pref.	4	1	2	Nil
	Salvador	100	2.11.40	£7,687	— £925	18	£158,338	£174,282	— £15,944	—	—	—	—	—
	San Paulo	153½	5.1.41	37,500	+ 11.098	1	37,500	26,402	+ 11,098	Ord. Stk.	50	23	28	8 1/16
	Taltal	160	Nov. 1940	4.615	+ 1,860	22	13,933	10,540	+ 3.395	Ord. Sh.	15/1½	⅜	½	9½
	United of Havana	1,353	11.1.41	18,209	+ 977	28	418,831	478,311	— 59,480	Ord. Stk.	⅜	¼	5/16	Nil
	Uruguay Northern	73	Oct. 1940	1,271	+ 301	17	4,159	3,654	+ 505	—	—	—	—	—
Canada	Canadian National	23,695	14.1.41	959,007	+ 210,771	2	1,843,585	1,472,269	+ 371,316	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	—	4 p.c.	Perp. Dbs.	86	68	86	4⅜
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	105½	95 1/16	103½	3⅞
	Canadian Pacific	17,153	14.1.41	661,000	+ 133,600	2	1,289,000	1,014,200	+ 274,800	Ord. Stk.	9 1/16	4⅛	8⅛	Nil
India†	Assam Bengal	1,329	30.4.40	45,187	+ 6,529	4	135.060	120,437	+ 14,623	Ord. Stk.	99⅜	71	99	3
	Barsi Light	202	30.11.40	3,660	— 2,910	34	105,555	82,132	+ 23,423	—	—	—	—	—
	Bengal & North Western	2,086	Dec. 1940	238,500	— 1,638	13	732,825	661,335	+ 71,490	Ord. Stk.	283	234	258	6 3/16
	Bengal Dooars & Extension	161	Sept. 1940	14,625	+ 508	26	78,405	66,243	+ 12,162	,,	218½	195	225	5½
	Bengal-Nagpur	3,269	31.10.40	258,450	+ 51,860	29	4,963,715	4,495,671	+ 468,044	,,	96	83⅜	96½	4⅛
	Bombay, Baroda & Cl. India	2,986	31.12.40	321,600	+ 3,375	39	7,311,375	6,661,650	+ 649,725	,,	108	99	107	5⅜
	Madras & Southern Mahratta	2,967	20.11.40	160,500	+ 21,403	32	3,795,091	3,574,124	+ 220,967	,,	104	97⅞	101½	7⅛
	Rohilkund & Kumaon	571	Dec. 1940	54,450	+ 317	13	144,075	135,650	+ 8,245	,,	284	238	255	6½
	South Indian	2,542	20.11.40	113,796	+ 32,907	32	2,910,150	2,597,195	+ 312,955	,,	93¾	83	87½	5 1/16
Various	Beira	204	Nov. 1940	69,360	—	9	145,468	—	—	—	—	—	—	—
	Egyptian Delta	623	30.9.40	7,602	+ 1,784	26	89,819	94,881	— 5,062	Prf. Sh.	7/10½	⅜	⅞	Nil
	Kenya & Uganda	1,625	—	—	—	—	—	—	—	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	53	44½	46½	7½
	Midland of W. Australia	277	July 1940	11,397	+ 139	4	11,397	11,258	+ 139	Inc. Deb.	88	80	82½	4⅝
	Nigerian	1,900	26.10.40	31,270	+ 7,575	30	1,059,899	874,277	+ 185,622	—	—	—	—	—
	Rhodesia	2,442	Nov. 1940	474,933	—	9	976,223	—	—	—	—	—	—	—
	South Africa	13,287	14.12.40	781,073	+ 89,087	37	25,540,934	23,953,923	+ 1,587,011	—	—	—	—	—
	Victoria	4,774	Aug. 1940	888,289	+ 190,022	9	1,756,717	1,383,157	+ 373,560	—	—	—	—	—

Note. Yields are based on the approximate current prices and are within a fraction of 1/16. Argentine traffics are now given in pesos
* Quotation is of June 17, 1940; dealings subsequently prohibited † Receipts are calculated @ 1s. 6d. to the rupee